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ORIGINAL ARTICLES.

THE SCHOOLROOM A FACTOR IN THE PRODUCTION OF DISEASE.

Read in the Section on State Medicine, at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

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This is the first time in the period of my membership in the Association that I have had the honor to appear before your Section. I am satisfied that this affliction has been put upon you by mistake in making up the schedule for the last year. Most of my time is spent in the Section of Pediatrics. It may be truly said that any doctor who has practiced his profession for a score of years has in that time become a true philanthropist. That he will always be found to take the greatest interest in whatever concerns the welfare of the human race. Obedient, therefore, to your call, with the desire expressed, I have hastily prepared a few words upon a subject with which I am brought into daily contact. A subject which not only concerns the present, but also the future health of children.

It is a fair general estimate that one-third of the lifetime of every educated person is passed in the schoolroom. It follows, therefore, that the location, construction and surroundings are all matters of importance. It is gratifying to know that a great advance has been made in cities in these particulars. If, however, education means the development as well as the training of the mind, there is still much to be desired. Every schoolhouse should be located with a view to the free admission of sunlight and fresh air. In Switzerland the summits of small hills are selected as the proper location. The building should be made attractive to the eye in every possible manner. Ocular impressions are powerful educators. Manufacturing corporations in our eastern cities and villages appreciate this as bearing not only upon the physical health, but also the happiness and contentment of their operatives. The immense cotton factories which one sees in New England present the appearance of palaces, surrounded as they are by parks, lawns; with fountains and rare and beautiful flowers. I have been told that the proprietors are abundantly repaid for this great outlay of money in the moral and physical welfare of their tenants. But the operatives in mills and workshops ought not to be compared with children. Men and women can withstand the effects of vitiated air and unhealthful surroundings for years without serious danger to their health. The susceptibility to disease from such causes is in inverse proportion to the age of the individual. The inside of the schoolroom should also be made attractive. Instead of blank walls there should be paintings, historical and instructive. Pictures are wonderful educators.

Ventilation, although universally acknowledged to be of the utmost importance in maintenance of health, is still very faulty. The hot-house plan prevails. The fault is not so much with the teachers as with the home. Children reared in stove or furnace heated homes are chilled at a temperature of 66° F. in the schoolroom. This temperature is quite sufficient if begun in the autumnal commencement and kept up all winter. The desire for more heat arises from over-exhaustion and depletion by brain-forcing study, or want of proper exercise in the open air. The cubic space of air to each scholar varies in our schoolrooms from 200 to 300 feet. Prof. Kedzie fixes 300 as the maximum limit for health. This would necessitate an entire change of air about every fifteen minutes to prevent re-breathing. An ordinary schoolroom would require 175,000 cubic feet of air per hour. There can be no doubt that this amount of fresh air is needed. How to obtain such ventilation without exposure to draughts must be a perplexing question to every teacher.

The top and bottom protection slide, or better, the middle-joint sash ventilator ought to be enforced. The science of respiration has demonstrated that the largest amount of carbonic acid compatible with life is 7 parts in 10,000. These estimates are made in mines, where the dimly-burning candle and the miner's lamp are extinguished. When, however, the carbon dioxide present is due to overcrowding a much smaller amount becomes oppressive. In closed churches and theatres a drowsy audience is not always the fault of preacher or actor.

The schoolroom is a propaganda of contagion. The opening of schools in the autumn is the sig-

nal for the outbreak of contagious diseases rekindled from the still smoking embers of the last year's epidemic. There is no remedy, save in the formulation of discreet rules and their rigid enforcement by the authorities. Children come to the schoolroom from every sort of home, the unclean and the clean. Those wearing soiled clothing mingle with the neat and tidy. No schoolroom should have an odor, and no teacher should be employed whose olfactories are at all blunted. There is a prison smell, a hospital odor, a lying-in odor, etc., and there is a school odor, and whereever these exist there is disease and death. Right here is the place to begin the practical instruction in hygiene. Impressions made upon the growing mind are lasting for good or evil. It is very hard to convince people of the necessity of caring for their bodies after they have formed habits of uncleanliness. This is the reason that we meet with so much opposition in enforced sanitation. We shall never accomplish much in public hygiene until we commence with the school room. Washrooms, clothes-rooms, shoe-rooms, are necessary attachments to every schoolroom.

School Headache.—This is one of the most common complaints among pupils. The cephalalgia is frontal—often supra-orbital. There is always a slight elevation of temperature—and anorexia, Oculists have written upon the frequency of such headaches, and attribute the attacks to overstrain of the eyes. As a result we see boys and girls below their teens *wearing glasses.* Such cases are very common in my practice and I have almost invariably found them due to constipation, which may be attributed to sitting, but more especially to inattention to the calls of nature. The evacuation of the cæcum depends very much upon the contraction of the neighboring muscles, the psoas and iliacus, as in walking. School constipation is of this character, and is not unfrequently attended by typhlitis and circumscribed peritonitis. Females are proverbially prone to constipation with acid eructations. In more advanced schools, colleges and seminaries neglect of the bowels causes at least two-thirds of all illness. The most apparent sequence is a gradual poisoning of the system by retained excrementitious matters constituting a condition properly called stercoræmia. The subjects of such blood poisoning present a sallow anæmic appearance with a languor marked in every movement. But the consequences of school constipation, besides producing headache and lassitude, fall elsewhere with the female. The frequency of uterine displacements in virgins is recognized by gynecologists. We instinctively shrink from the treatment of such conditions, while there is every reason to believe they exist and that their existence is largely due to retention of urine and fæces beyond a reasonable limit. We live in a day of specialism, and the demand is for more. Eye doctors, nerve doctors, pile doctors, and womb doctors, draw their patrons most largely from the schoolroom. Grandmothers peer curiously over their spectacles when informed that their granddaughters are subjects of diseases which only married women are supposed to have and seldom had in their day.

Eye Troubles.—The frequency of hypermetropia and astigmatism is not only noteworthy among pupils of our public schools, but also myopia, due to prolonged study. The statement that nine-tenths of all cases of myopia originate from the schoolroom is startling. This defect is practically unknown among the uneducated. It is in consequence of overstrain. The deformity once acquired is permanent and renders the subject unfit for many of the duties of life. Oculists, I believe, consider the disease progressive in character, originating in childhood, never after the age 20 years. Ribot says the number of short-sighted persons must necessarily increase in any nation devoted to intellectual pursuits. Germans are proverbially near-sighted. Dr. Loring, in a paper upon this subject, makes the statement that 62 per cent. of the public school pupils in Germany are short-sighted. A faulty construction of the windows in regard to the admission of light may cause a preponderance of such cases to obtain in a certain school. It is probable that this deformity may become inherited.

Consequences of Overstrain not the same in both Sexes.—So long as sexual differences remain unappreciated, girls participating in rude, boyish sports, school study and restriction may be considered to affect the sexes equally. This period of life, always too brief, is much shorter in cities than in the country—a circumstance largely due to that oft' forgotten but nevertheless potent educator, the "street school." The period of more active growth and development corresponds to the age at which the most arduous tasks are required of the mental faculties. The physical perfection of woman demands at this period plenty of exercise in the open air and free supply of blood to the pelvic viscera. Instead, however, the blood is used to supply the brain, and the generative organs suffer. The inexorable laws of society demand an early finish to the education at any cost. The latter is acceeded to, and the consequence falls like a withering blight upon the tenderest buds of our hope and promise. There are few, if any, female schools where there is any relaxation of discipline or study on account of the occurrence of menstruation—and this despite the knowledge that mental application at this time results in hysteria, and often in mental aberration, or the complete arrest of the menstrual function. Here, indeed, is the axe laid at the root of the tree, and the foundation broad and deep for future invalidism and the work of the gynecologist. Another phase of this question is already attracting the attention of thinking

men in the medical profession; a question assuming National importance; it is the sterility of highly-educated women, who, when girls in their teens, have been subjected to the ordeal of collegiate examinations. It has also been observed that of those who conceive, the mortality in child-bearing is exceedingly high. We are rapidly losing our National identity. It has been estimated that the State of Massachusetts will soon become depopulated of American children, notwithstanding her 70,000 old maids. Dr. Moore, following the inductive reasoning of Herbert Spencer, makes the statement that "America must in future look to Europe for her mothers." Sociologists and biologists have shown that motherhood decreases with high intellectual cultivation.

Just here I am constrained to say something in regard to the fault in our educational system itself. Children are taught more and know less than in our grandfathers' days. Book knowledge is overestimated and practical reasoning undervalued—a fault which extends to our colleges and medical schools. A blind allegiance to the so-called authorities leads to effeminacy of thought and destroys individuality. The failure of our brightest collegiate graduates to obtain lucrative employment is certainly suggestive of a want of practical education. The constant struggle in the various school grades is to pass rather than to know, and, as Huxley puts it, "outraged nature takes her revenge," they do pass and they don't know. The credulity of many educated people, and the readiness with which they seize upon the most palpable frauds, is a sad comment upon our schools of philosophy. A few years ago it was spiritualism, then blue glass, and now Christian science. Think of a young mother and her infant perishing from causes which even a trained nurse or a midwife could have easily prevented. She was a woman of culture and died a martyr to Christian Science, a sect to which she and her husband belonged. Facts which have been recognized from the beginning of science are isolated and built into sects. How long will it be before we shall resort to songs and incantations for the restoration of the sick, as did the ancient Greeks?

Chorea (*St. Vitus' Dance*).—Chorea, with all its train of consequences upon the growing brain and nervous system, is among the diseases produced by overstrain in the school-room. A discussion of the relation between chorea and rheumatism would not be germane to the subject under consideration.[1] In a former paper I have attempted to show that the exhausted nutrition of growth, plus brain, work produces both, and also that the two diseases are controvertable, if not indeed identical. Here, as elsewhere, overstrain is not equal in consequences upon the sexes. Girls are more prone to chorea. When my clinic for diseases of children was held in the fall and winter months, cases of chorea were only occasional luxuries for a lecture subject. Since, however, this clinic has been made to include the spring and summer months, there is rarely a lecture day without a new case of St. Vitus' dance. Nine cases typical of the disease were present at the dispensary in a single week; of these seven were girls and two boys. All were pupils in public schools and were bright and ambitious scholars, who shed tears when told that the treatment would include a complete cessation of school work. Besides these, I select from my notes of private practice a few cases to illustrate the cause.

L. G., a bright girl of 13, growing rapidly, attacked during Christmas week. The involuntary movements, at first unilateral, rapidly involved the whole body, causing her to fall. Studies in school were history, geography and spelling to memorize, reading with definitions, arithmetic mental, arithmetic practical, drawing, grammar, music and composition. Time of study in school-room, including recitations, five and one-half hours, necessitating three hours' hard study at home every night excepting Sunday. She was at the head of her class, and talked in her sleep of her studies.

A. H., æt. 17. Chorea severe, general, but more marked on left side. Hardly able to carry her books to and from school. Same grade in different school. To these, from the same school, could be added four others ranging from 12 to 16 years of age. Three of these developed cardiac lesion, one died of peri- and endocarditis, and while the subject of chorea developed polyarthritis.

The difference between voluntary and forced learning is the difference between mental strength and mental debility. All of these children will be intellectually as well as physically weakened by the nerve-storm through which they have passed. The difference between partaking of food when we have an appetite and crowding it into a stomach already satiated is dyspepsia. There is a mental as well as a physical dyspepsia, and these over-taught school-children are the victims. The power of concentration of thought is feeble in the child. "The child's will is the wind's will," says Longfellow—and we see in this a wise provision of nature, as beneficial to the growing brain as is motion to the limbs.

The physiological law is that any work in excess of the power of the system adds nothing whatever to the desired result. If a child's capacity to learn is exhausted in two hours, there will be no gain by studying five hours. It has been ascertained that the longest period of thought that can be concentrated upon a single proposition with advantage is fifteen minutes. The astonishing progress made by pupils in our night schools has been a matter of comment among teachers.

[1] "Acute Rheumatism of Childhood," Kentucky State Medical Society, 1879.

Can it be that the flickering gas or lamplight, and the depressing influence of night, are found conducive to learning? Certainly not. But the importance of a suitable admixture of physical labor is so great that even these serious objections are overcome. England has a system by which 100,000 children are able to get from two and a half to three hours' schooling in the twenty-four. This is known as the "half time law," and it has been found that such scholars compare favorably in attainment with those who attend the regular all day sessions.

Consumption Favored by School Discipline.— There is no point better settled in pulmonary therapeutics than the necessity of development of the apices of the lungs. Whatever of truth, if any, shall be found to attach to Koch's microbes, the fact remains that consumption may be prevented by expansion of the top of the lungs, that this is always the favorite seat of tubercular deposits, and that, conversely, whatever tends to lessen the capacity of the apex tends to produce the disease.

The position of the growing child bending or stooping over a desk in school for six hours a day effectually prevents such development. Shoemakers, bookkeepers and tailors are found more than other trades in the consumptive ranks, and it is in the main due to this cause. The respiration becomes insensibly more and more shallow. In the child the shoulders are approximated more readily, and the lung actually folded in upon itself.

This matter of the expulsion of the residual air in the lungs is a too much neglected point in therapeutics. The introduction of vocal music in our common schools will result in great good. Dr. Rush declares that the German people are largely indebted for their exemption from pulmonary consumption to the strength and volume which their lungs acquire in the practice of vocal music. It would be well if, at the end of each study hour, classes were obliged to stand and sing while fresh air is being admitted to the room.

In conclusion, Mr. Chairman, let me say that the evils of the school-room are not primarily the fault of the teachers, who are always overworked and always underpaid. The fault is in the people and the needed reform must commence with the people. A complaint was made a few years ago that shoemakers were ruining women's feet by making high-heeled and contracted shoes, to which complaint the craft very aptly replied, "We would not make them so if they were not demanded." Let the public demand instruction in natural laws, mental and moral philosophy, and hygiene. Let the old Greek apothegm be hung at the entrance of our institutions of learning. Physiology and hygiene should be taught in all schools and all grades. At present, if at all studied, it is reserved for high schools and colleges, where it is usually finished in a few weeks. Cæsar said to the soothsayer, "What concerns ourselves must be last," and the sentiment cost him his life. It has cost many lives since.

It is as important to know that bile ducts open into the intestines as it is to know that the Lena River flows into the Arctic Ocean. It is as important for a girl to know how long it takes beefsteak, pickles and slate pencils to digest in a stomach as it is to know how long it takes the light of one of the fixed stars to reach our planet. Let the course of study be made different for the sexes. Lectures in domestic economy might be substituted for political economy, so that when the *ultima thule* of their ambition shall be reached they may reign queen of the household and remain queen of hearts. How many physical and mental wrecks, which now lie at the very threshold of manhood and womanhood, might be prevented by proper instruction. Children are educated more on their way to and from the school-room than they are within its walls, and this kind of education usually sticks, because it is obtained from observation. The first evasive answer to the question of the origin of themselves is the first false step in the child's future career. His innocent questioning of natural laws is silenced with such an emphasis as to awaken a latent curiosity. Is it any wonder that he should take his question to the great street school, with its vulgar jest for an answer? And is it a wonder that he should regard his teacher in the alley as a superior oracle whom he will consult on future occasions when such questions arise? Let us have such a blending of the physical with the mental development that brain work will not tire. Then the school-house will be the promoter of health rather than disease. There is no reason why study should not strengthen the mind as well as that the steady blows of the blacksmith strengthen his arm, if properly conducted. Then, and then only, may we hope to see more of that exceptional attainment, a sound mind in a sound body.

DR. LINDSLEY, of Tennessee: I have listened attentively to this paper, and with much interest. Since 1855 I have been connected with the Board of Education of my State, and have visited school-rooms all over the United States, talking with the superintendents and professors. The subject of Professor Larrabee's paper is of paramount importance, relating as it does to the millions of children attending our schools. There are two important points which occur to me in connection with it: 1. Medical men must arouse public attention to the necessity for paid medical inspectors. 2. I would put no text-books of hygiene in the schools, because the masses do not get this education. The majority of children leave the schools before reaching the higher classes where this subject is taught. Hygiene should be impressed upon them by every feature of their environment.

DR. HIBBERD, of Indiana: I agree with Dr.

Lindsley in the utter impossibility of teaching children in primary schools enough physiology to be of utility. There are many who are grandfathers who do not know what it is absolutely necessary to teach. Teach youth to observe, and what things they should observe. The trustees of schools understand the necessity for air, light, etc., but they cannot get the money to provide them. Every school-house in the land should be situated so as to face the best direction of the compass, having air and light in abundance, but it will cost a great deal of money.

We must recognize that all children are not exactly alike in their capacity for receiving education; and the present methods are faulty in teaching all children on the same plan. Due regard must be paid to mental and physical variations, and sound minds and bodies cannot be had until this is recognized.

DR. HAMILTON, U. S. Marine Hospital Service: The question of eyesight in school-children is one of particular interest to me, and foreign journals have devoted a great deal of space to the consideration of this question during the past year. Dr. Larrabee referred to the majority of German children being myopic; I think this is due to the employment of the old black letter. German medical text-books are printed in Roman letters; but for political reasons the black letters are generally used. I certainly agree in the necessity for school inspectors; and the first thing they should do would be to examine the text-books, the paper of which is often inferior, and the printing but little better. Another feature demanding improvement is the sitting arrangement of a school-room. We all know the country school-room with its four rows of desks, and windows on either side of the room, which imperfectly light the middle rows of desks.

DR. VAUGHAN, of Michigan: While I agree with the paper, I do not believe that all defects in eyesight in school-children are attributable to the school-room. If you enter any family room at night, the father and mother will be found sitting on either side of a table on which the light is, and the children are allowed to sit anywhere. I believe more harm is done our young girls by sitting up late at night at parties and dances, than by all the alleged confinement in the school-room. Dr. Larrabee did not refer to the stairs, which are usually selected as one of the fertile sources of disease in young girls; but if you watch a woman go upstairs, she does it with her body bent forward and swinging from side to side, instead of going upstairs erect. I believe the German method of the climbing cure might be employed advantageously in some of these cases.

I am not prepared to state how it is in other States, but in Michigan most children are better situated at the school-house than at home. Farm houses, as a rule, are far from being good sanitary types. I do not believe that any necessary money would be withheld to secure first-class schools. The ignorance of teachers on hygienic matters seems to me to be the primary evil.

DR. HIBBERD, of Indiana: I wish to complete an omission in my remarks. I believe with Dr. Vaughan that the fundamental education should be with the teacher. But the architect must also be remembered. This gentleman usually puts his efforts on the adornment of the exterior of the building, and the interior is suited to this. We cannot get architects to give sufficient attention to the interior of these buildings, because it is their aim to produce handsome work.

DR. LINDSLEY, of Tennessee: I should like to ask Dr. Vaughan if the State Board of Health of Michigan has not acted as inspector of schools; and if its creation has not permeated the school system with its influence?

DR. VAUGHAN: The plans for school buildings must be approved by the State Board of Health.

CATARACT EXTRACTIONS, WITH ONLY THE EYE OPERATED UPON CLOSED BY ADHESIVE STRIPS.

THE OTHER EYE LEFT OPEN FOR THE GUIDANCE OF THE PATIENT.

Read in the Section on Ophthalmology, at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

BY JULIAN J. CHISOLM, M.D.,

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At the last meeting of the American Medical Association, June, 1887, I read a paper on the advantages of the isinglass plasters as the only lid dressing after cataract extractions, and the keeping of patients in moderately lighted rooms instead of the dark ones. I also stated that for some weeks I had made bold to leave one eye open for the guidance of the patient during the entire after-treatment. That this method of after-treatment would add immensely to the comfort of the patient, was evident to all; the only question was as to its safety, for the great results to be finally secured. Since that time, another year has passed, and with the twelve months' experience added, much more confidence can be expressed in the advantages of the method, revolutionary as it seems.

In my "Hospital Cataract Case-Book," every case of cataract extraction is entered. With the pure and simple senile cataracts in healthy patients, are put those of traumatic or inflammatory origin with iritic, choroidal and glaucomatous complications; all appear. Heretofore, in making up my reports and in tabulating the amount of vision secured to patients, a cataract extraction that was in every way a perfect success, the after-treatment having been accompanied

by no inflammation whatever, leaving the patient with a clear cornea and good pupil, was counted a failure because of nerve atrophy or extensive central choroidal or retinal changes, now rendered clearly visible by ophthalmoscopic examination through a transparent vitrious. As in the percentage of no restoration to sight these cases unjustly appear as failures in the general summing up after cataract extractions. In the list which I now present I will put only those of uncomplicated cataracts, so that proper comparison may be made between the methods of light after-dressings and treatment in light rooms which I strongly recommend, and the heavy dressings and dark rooms which others use.

In this list, culled from my case-book for the year ending May 1, 1888, I find seventy-four cataract extractions, dressed by a single strip of adhesive plaster over the eye operated upon only, the other eye being left open. Of these eyes so simply dressed none were lost. There was not a single case of corneal sloughing. In every case the cornea was clear, and in only two cases were the pupils closed by iritic adhesions, rendering an iridectomy in the future needful for the restoration of vision. In all of these cases the biniodide of mercury solution was freely used as an antiseptic during all steps of the operation.

My successful cases are not all V. $\frac{20}{20}$. Many of my hospital patients are drawn from distant regions, poor parts of the Southern country, and have not the means to pay for a second visit to Baltimore to have the secondary operation performed for the removal of capsular thickenings. We all know that these capsulotomies must enter largely into advancing cataract patients to the higher degrees of vision. Most of my cases are farmers from the States of Virginia, North Carolina, and Maryland. If they can see to read ordinary print and attend to their farm duties it is all that they desire. The improvement is so immense upon the no seeing with matured cataract, that they are perfectly satisfied with the results as secured by a primary operation. In their anxiety to get home as soon as the eyes become strong enough to stand ordinary light, I cannot retain them over a fortnight under observation. At this stage of progress after cataract extraction, vision, as we all know, is by no means the best. I again state, that if my cases when I dismiss them, at the end of two weeks never to see the majority of them more, must be accepted on the status of V. $\frac{20}{20}$, I will contrast unfavorably with the operators in the largest cities, whose cases may frequently return to them for examination and after-treatment for many months, until time, secondary operations, the careful adjustment of lenses, with the correction of such astigmatism as remains after the operations, will put their eyes in the best condition to exhibit the high degrees of excellence which cataract operations will finally bring about.

The point which I desire to make, is this, in answer to the following question: Is the exposure of one eye, and the light dressing of the other eye by a piece of adhesive strap, after cataract extraction, conducive to inflammation? My experience answers very positively, that it does not. It matters not what our preconceived notions are. It is so easy to theorize as to the necessity of adjusting compresses for the support of the whole cornea, so that all parts will be equally pressed upon. That absolute rest of the eyes is required for the healing process to be perfected. That the movements of one eye will necessarily cause the closed one to move to like extent, and that this frictioning of the wounded cornea against the lid must bring on inflammation. These opinions may be very satisfactory to those who always close up both eyes, and put their patients to bed, where they are kept on their backs for days in the dark. But if they will adopt the method which I use of closing up one eye properly, with a piece of isinglass plaster, that eye is as absolutely safe against all jarring as if a cut finger were dressed in similar manner. By this method, which in no way can disturb the nice relations which the eye ball and lids have always sustained to each other, there is nothing to friction injuriously against, even when the eye does move in its relations with the exposed one.

If an ophthalmic surgeon in his hospital work will try the methods honestly in an equal number of simple senile cataracts, his personal experience will soon show him the advantage of this simple treatment. Let him take a number of cataracts, as they may come in from week to week for surgical treatment, each alternate one to be operated upon in his bed, with both eyes closed by compressers and bandages, and kept absolutely quiet in a dark room with all the restraints that are usually imposed. Again, let each alternate one be operated upon in front of a large window, upon a convenient operating table, then close the eye properly with a piece of isinglass plaster one and one-half inches long and one inch wide, see that it is so thoroughly adjusted that the lids are made into one piece as it were, for the perfect support of the divided cornea. Leave the canthi free from the covering to permit of the escape of secretions, and for the introduction of drops by capillary action, if they be needed, without disturbing the adhesive dressing. When the plaster is dry and the lids closed let him get off from the table and walk to his moderately lighted room, guided by the eye which has been left open. When there, let him follow his own inclination to lie on the bed or sit in a chair. He will undress himself at bedtime and dress himself in the morning, eating his regular meals, and enjoying the sight as well as the conversation with friends. Then remove the strap from the one, and the badge from the other simultaneously. If

the cases have been operated upon with equal care antiseptically, the operation being in all cases equally smooth, the surgeon will find himself at the end of two weeks with twenty cases of cataract extraction equally free from inflammatory complications, and that is all that the most anxious operator can wish for.

During the week of treatment, at the daily visits, the surgeon must have noted the cheerfulness of the patient who had one eye opened and who had enjoyed the pleasant companionship of friends, when contrasted with the gloomy doubts and the shakened faith of the blind-folded one, who could not help inquiring how long he must endure this darkness. We will say nothing of the lighted candle which was brought in by the nurse to keep the surgeon from colliding with the table or other bed-room furniture. Then contrast the condition of the eyes at the time the strap and the bandage are removed. The one in the lighted room looks at you and you at him, as you have done daily. You have seen the adhesive strap day by day free from secretions and retaining its adjustment. You now see the newly exposed eye singularly devoid of redness and of weeping. It stands the light wonderfully for one so long closed, because the one always opened has preserved the closed one from the acquired sensitiveness engendered by darkness. As the candle is brought for the inspection of the eye released from the dark bandage, the injection and weeping, incumbent on the exposure after the week of night, do not surprise us, for we are accustomed to see it in every case thus treated.

Follow the two classes of cases up to the end of the two weeks, to the day of dismissal. The one treated by the bandage has never been for a moment without the protection of dark smoked glasses, and cannot go for a moment without them. The one treated by the adhesive strap with one eye opened had never had the smoked glasses on, and has never felt the want of them. One cannot bear the light, the other is not aware of its presence, and only puts on smoked glasses as he goes out on the street because he is told to put them on.

In the March number of the *Archives of Ophthalmology*, 1888, Dr. Oliver Belt, my resident physician at the Presbyterian Eye and Ear Charity Hospital of Baltimore City, has published a paper written some months since, on the result of one hundred cases of cataract extraction treated by the isinglass plaster, in light rooms and without restraint. Some, the earlier cases, with the closure of both eyes, and the last half of the series with one eye alone closed. These were taken as they appear in the case-book of the hospital, and as he very properly says, some of them with glaucoma, nerve atrophy, and other fundus complications. In his table it is seen that eighty-three of the one hundred had good vision, seven had improved sight; in five there was no improvement from causes, fundus troubles easily appreciable after the cataract was extracted, and five were failures. Among the five failures one was from purulent contagion, panophthalmitis, a misfortune or accident that would have occurred under any kind of after-treatment. The second was in an old feeble man of 91 years of age, who was willing to take the risk in his desire to see. The third patient left the hospital for her city home seeing well. In getting from the street car to her house door she was caught in a summer shower, and from wet clothing and exposure the eye took on inflammation and was lost. Most surgeons would have ignored this accident, as she was dismissed from the hospital with good sight. I counted it as a loss for final success. Two alone remain as inflammatory complications, belonging to the operation of cataract extraction, and the treatment, a loss of 2 per cent.

In the same volume of the *Archives of Ophthalmology*, for March, 1888, Dr. H. Knapp reports a series of cataract extractions without iridectomy. He states how carefully he has used antiseptic precautions, avoiding all unnecessary movements, as tending in his opinion to the displacement of the iris, and how he has bandaged with care both eyes. He contrasts his method of dressing with the simpler method. Thinks Chisolm has gone too far in simplifying the after-treatment of cataract extractions, and then compares the final results in his carefully selected series of simple senile cataract extractions with the table from Dr. Belt's report of my hospital work, in which complicated as well as simple cases are mingled together. He closes this part of his paper with this statement: "The superiority of Dr. Chisolm's bandage is not borne out by his statistics. Five per cent. of loss and 5 per cent of no vision, is below the average success of experienced and skilled operators to the front rank of whom we all know Dr. Chisolm belongs." This is an unfair contrast, the more especially as Dr. Belt has explained in his paper how these cases were failures in seeing, even when no inflammatory complications had arisen during the after-treatment of the cases; and how an ophthalmoscopic examination showed glaucoma, nerve atrophy, or central choroidal patches. If the operation of cataract extraction, even in these cases, had not been in every way successful how could the ophthalmoscopic investigation have been afterwards made. Sight was not restored, but that was not the consequence of an unsuccessful cataract extraction.

I here repeat what I had mentioned in the beginning of this paper, viz: that from May 1, 1887, to May 1, 1888, I had made seventy-four simple uncomplicated cataract extractions under the simple dressing of one eye closed with an adhesive strip, keeping the patient in a lighted room, and avoiding all restraint in his move-

ments and in his surroundings. Of these cases I have not lost a single eye. In only two did inflammatory closure of the pupil occur, which will require a secondary operation for the restoration of vision.

I have now had two years' experience in this simple dressing of eyes after cataract extraction. For the past year I have left one eye open in all cases. I have not used dark rooms. I have not operated on the patient in bed, but always in the operating room, before a large window, and upon a firm narrow table. In every case the patient has walked from the operating room to his chamber, guided by the eye left open when it possessed vision enough. In no case was the patient put to bed unless he desired it, and every freedom of movement was permitted. In no individual case have I seen any trouble that I had not met with before, when I was in the habit of using careful bandaging, dark rooms and all the restraints, which many still impose.

As to the final success of the operation, I have always thought that nine-tenths of the dangers were incurred during the operation. If the entire manual has been satisfactorily, or as we now say smoothly done, under antiseptic precautions, it makes but little difference how the case is afterwards dressed, success is most likely to crown the skillful operation.

I know that eyes get well under bandaging and bed confinement for I have individually had the experience in hundreds of cases. I know that eyes after careful cataract extractions will get well without inflammatory complications, under a light adhesive strap dressing of the eye operated upon only, the other being left open for the guidance of the patients. Whether the patient is put to bed and kept quiet or whether he is allowed to sit up and walk about, whether he is undressed or is allowed to dress himself, whether he is made to keep silence or is allowed to talk, whether he is kept in the dark or is permitted to enjoy the pleasure and comfort of daylight, whether he is surrounded by no restraints or is rigidly deprived of all liberty. In all of these diametrically hostile conditions of after-treatment of cataract cases, those carefully and judiciously operated upon will have sight restored and all in like ratio. Then let us show mercy and consideration for the comfort of those who must submit to our dictation, and put as few restraints as possible upon those we operate upon, the more especially as experience is beginning to show that these restraints count for nothing in the final good results to be secured.

DISINFECTION OF SPUTA.—There have been placed at the Lariboisière Hospital, an apparatus for the disinfection, by a new procedure of antisepsis, of spittoons used by tuberculous patients. It is to be applied to all the hospitals of the Seine.

TUBERCULAR LARYNGITIS.

Read in the Section on Laryngology at the Thirty-ninth Annual Meeting of the American Medical Association, May 9, 1888.

D. EMMETT WELSH, M.D.,
OF GRAND RAPIDS, MICH.

In point of frequency tubercular disease of the larynx ranks third among the organs so affected; namely—the lungs, intestines, and the larynx. The disputed question as to its primary involvement, or its being secondary to an already existing lung difficulty, has been practically settled; as recently investigated and recorded cases have shown almost conclusively that a primary involvement can take place. Into this dispute this paper will not enter, but will endeavor to show forms of catarrhal inflammation existing primarily as such, as important factors in its production.

There are certain forms of catarrhal inflammation as seen in this vicinity—Western Michigan—attended with an excessive secretion of mucus and, at times, muco-pus. The nose is almost constantly filled with this secretion and the naso-pharynx and pharynx constantly bathed with the same. This secretion is, with difficulty, removed; and the mucous membrane of the nose is at times very noticably inflamed with points of erosions and tendencies to epistaxis. The pharynx presents this same appearance but with this addition, that it presents a relaxed or flabby condition. The larynx is also flabby, and instead of the pinkish tinge of color it presents a grayish hue. The serous and mucous glands in this condition constantly freeing themselves of their secretion; the mucus passing down the pharynx and lodging in the arytenoid commissure, develops an irritation and provokes coughing. This is further increased by hawking and an extension of the inflammatory action.

The subjects of this condition are generally persons of a strumous habit, or those suffering from repeated attacks of colds, coupled with an already existing impairment of health.

A current of inspired air passing over this kind of tissue, though elevated in temperature and changed from a condition of dryness to one of moisture, is as injurious to the general health as dust and cold ladened air is to the finer bronchi.

The stomach is impaired by the commingling of the food and mucus, thus adding another source of injury to an already existing condition. The impairment of health is noticed by loss of appetite, emaciation, pallor, and slightly elevated temperature. You are generally consulted on account of an irritative cough devoid of free expectoration, when, on inspection and examination the above condition is noted, or there occurs later a partial anæmic condition of the palatine arches and the pharynx, and a grayish hue to the larynx, with infiltration of the sub-mucous tissue.

From repeated attacks of inflammatory action the mucous membrane becomes lowered in its

vitality; there is partial arrest of its function, as shown by the loss of endosmotic action of the Schneiderian mucous membrane, due to a lack of absorption of the water which is condensed on its surface and drips from the nostrils. Hence catarrhal inflammations readily follow in those of lowered vitality. Further, there is a loss of elasticity in the capillaries of the part, as seen by the stagnation and retention of blood in them producing congestion of the parts. This stagnation may be complete or isolated, and, serum now being poured out, swellings necessarily result.

Allowing a still higher impaired vitality the serum and mucus exuded will contain pus corpuscles. Pus is not irritating in character, yet under certain circumstances it is rendered ichorous and then it is poisonous and destructive to neighboring tissue. The poisonous part is capable of uniting with and destroying animal tissue, and when absorbed into the circulation destroys the vitality of its constituents, giving rise to abscess and sepsis. Its effects on mucous surfaces are ulceration, mortification, or some actual loss of tissue.

Bearing in mind how easily ulceration of mucous surfaces takes place, we cannot but be surprised at those cases which seeming of minor importance certainly involve solutions of continuity in situations very open to absorption. This ulcerative process taking place in those already debilitated, or particularly those of a strumous habit, renders an abnormal sensibility of certain tissues liable to injury, and is most marked in mucous membranes, and their inflammatory action is exceedingly protracted. When inflammatory action, occurring in healthy individuals, does not lead to or cause death of the part, its product is absorbed or leads to suppuration or the formation of vascular connective tissue. But in struma and those generally debilitated, absorption is retarded and its tendency is to infiltrate and accumulate in the tissue and so lead to caseous change.

Tubercle, in its simplest sense, refers to a most typical stage of a certain tissue change; and to the process which precedes its appearance, as well as that which follows, may the term tubercular be applied. Tubercle is found in the floor of scofulous ulcers and in certain affections of the mucous membrane, but it is not met with in all. Yet it must be borne in mind that there are grades and degrees of the tubercular process, as well as there are in inflammation.

The tubercular formative action may proceed thus far and, like inflammatory action, not always form pus.

Reindfleish considers scrofula the starting-point of the tubercle-producing process, and considers that the tubercle is usually derived by a process of infection from some near or distant seat of scrofulous disease, thus tracing the connection between certain eruptions of tubercle in the lung and a preliminary scrofulous bronchitis. If tubercle appears in a gland, then it is due to a scrofulous catarrh of the mucous surface; or, taking another example, a tubercular ulcer may begin as a catarrh and, after a time, tubercles appear at its base. Scrofula is the soil, tubercle the seed, and their relation confirms the theory that it is especially upon the soil of scrofula that the infection can and does take root and develop. Bearing now in mind the condition above given of the tubercular and pretubercular stage, and the lowered and impaired vitality of the naso-pharynx, and the existing debility of the patient, the proneness with which the mucous membrane becomes inflamed and the secretions of this membrane to become ichorous, and remotely, the formation of pus, I cannot but infer that catarrhal inflammations of the upper respiratory tract enters and creates a formative factor in the production of laryngeal tuberculosis, or even the naso-pharynx. And, knowing that tuberculosis is a disease manifesting itself primarily in the respiratory region, and that many catarrhal inflammations of the lungs begin in the larynx, it is fair to infer that in those cases where the eye reveals what the ear fails to detect, that the larynx is primarily attacked. Pathologically considered, four stages exist: anæmia, tumefaction, ulceration, caries and necrosis. On inspection, the appearances of the above are remarkably noticeable, and certain appearances are almost pathognomonic. Voice failure is a very early symptom, and during conversation a change in the character of the voice is very noticeable. In the beginning is noted a gruff hoarseness, which soon changes to a high falsetto, and gradually passes to a toneless whisper. At times there is complete aphonia.

Impaired respiration in the earlier stages is not a noticeable feature, yet, during the latter stages, dyspnœa may ensue, the result of tumefaction and the mechanical loss of mobility and ulceration of the cords.

Difficulty in swallowing is not always present, but when so, it is undoubtedly the symptom which hastens the death of the patient. At first liquids are only refused, and when taken they pass backward into the naso-pharynx or, from the impediment afforded to the movement of the epiglottis, may pass into the larynx and cause suffocation. As soon as ulceration takes place the pain on deglutition is extreme; thus the patient's refusal of food and the unfavorable termination that soon follows.

Pain on speaking is prominent, and when severe is usually referred to the ear. Cough is a prominent and a very distressing symptom, and in the advanced stages the paroxysms are productive of severe pain and are followed by extreme prostration. At first the cough is an irritative one, as though there was some foreign substance in the throat. Expectoration is only glairy in

character until ulceration is established, when it is mucus and muco-pus.

Hæmorrhage from the larynx is rare, and when suspected it is with much hesitancy we say it originated from the larynx.

During the stage of tumefaction a prominent feature is noticed. There is a pyriform thickening of the membrane covering the arytenoid cartilages and the commissure. This thickening is characteristic. The shape of the cartilages is completely masked by this club-shaped swelling, and it may extend upward to near or above the level of the cartilages and fill up the space between them. Previous to ulceration there are small whitish-gray patches noticeable either on the arytenoids or ventricular bands, existing singly or in groups. They are of short duration and ulceration speedily follows. Ulceration developing their peculiar character is a worm-eaten appearance, showing that degeneration has commenced in the deeper tissues. The ulcers are small and isolated at first, but soon unite by breaking down the intervening tissue and forming large ulcerative surfaces.

The following cases presented themselves for examination:

E. W., æt. 21 years, occupation mechanic. Had suffered from nasal catarrh for several years and complained of a dry, hacking cough and frequent attacks of nasal hæmorrhage. The nostrils and naso-pharynx were constantly filled with a mucus when, on its removal, the mucous membrane of the nares was inflamed, and the naso-pharynx and the larynx were of a lustreless color and presented a relaxed and flabby appearance. On phonation the distinctive features of the cartilages of Wrisberg and Santorini were masked and the vocal cords inflamed. The voice was changed in character to a marked gruffness. There was impaired appetite, emaciation, slight elevation of temperature, and a constant irritative cough. On auscultation and percussion the lung revealed no difficulty, yet there was a strong history of scrofula.

The nares and throat were sprayed with an alkaline spray, using Dobell's solution every day, and following the same up by spraying the throat with zinci. sulph., gr. ij to aq. ℥j, on alternate days insufflation to the larynx of a finely triturated powder containing iodoform, tannin and bismuth sub. nit. Internally, syr. ferri iodid., syr. hypophosphites, Fellows; and free outdoor exercise. A continuance of this treatment was carried out for three months, when the patient increased in weight, the cough and hæmorrhage had ceased, and I discharged the case as well.

My second case was similar to the first, with this addition, that on the arytenoids and ventricular bands there were isolated points of ulceration, and more marked constitutional trouble and partial aphonia.

The changes made in treatment were the omission of tannin by insufflation, using iodoform and bismuth in equal proportions. After four months' treatment this case improved and, seemingly, is well now, and six months have elapsed.

It is unnecessary to enter into details of the different forms of treatment, as each case presents its peculiar characteristics. I think many cases will improve, and particularly of those persons under 21 years of age. When local treatment has been very noticeably beneficial to the laryngeal difficulty, and there exist deposits in the lungs, a change of climate is need. Colorado or New Mexico are preferable. In the stage of ulceration little or nothing can be done, save to alleviate the distressing symptoms as they arise. Care should be taken not to fatigue the patient by local treatment, allaying the pains and difficulty of deglutition by first cleansing the parts with some alkaline solution and then spraying the throat with a solution of cocaine; after which applying morphia, iodoform, and acacia or bismuth, and endeavoring to render the patient's last hours as comfortable as possible.

BINOCULAR ASTIGMATISM.

Read in the Section on Ophthalmology at the Thirty-ninth Annual Meeting of the American Medical Association, at Cincinnati, May 7, 1888.

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I have not infrequently encountered cases of astigmatism in which, after having corrected the error in each eye separately, and on testing both eyes simultaneously, in binocular vision, have found that vision proximum was not perfect, and in order to attain normal vision near at hand, in binocular sight, the angle denoting the axis of the cylindrical glass must be changed in one or both eyes.

In correcting this binocular defect, types and the astigmatic bars were employed. If the patient looks upon the floor it will seem to incline to the right or left, and on changing the axis of one or both cylinders, the surface will appear level. But the same defect will be apparent if a board 12 x 3 inches, with parallel sides, be held in front of the patient at one metre, and on a level with the eyes.

In these cases then, the answer will be, that the right or left end of said "object-board" is wider than the other. The angle of one or both cylinders is changed until each end of the "object-board" seems equally wide, or in other words, the sides are parallel; and then it will be found that the astigmatic bars are seen normally in near or far vision, in binocular vision. All of my refraction cases are estimated, not only by the usual methods, but the test as given is applied to all cases of astigmatism before the investigation is regarded as complete.

The use of glasses thus adapted has been successful in practice, with one or two exceptions, and in these the use of cylinders had to be dispensed with and spherical glasses employed.

This defect in binocular vision does not occur, of course, in all cases of astigmatism; but observation has taught me that such errors are far from being uncommon.

The following explanation offered of binocular astigmatism, seems more rational than any other with which I am familiar:

If a perpendicular be raised anteriorly and horizontally midway between the eyes from a base line intersecting each *fovea centralis*; then, in testing each astigmatic eye separately, the *axis of vision* will, in *vision remotum*, be parallel to said perpendicular. If the ocular muscles are normally balanced in action, the plane which cuts the visual axis in the cornea will be vertical. In the normal eye, *its fellow being covered*, during vision proximum, *still* the visual axis may be parallel to our perpendicular, and hence the angle of the axis of the cylindrical glass may often be the same in remote and near vision, *when each eye is tested singly*. In binocular vision, when astigmatism is present, the distance is so great, in remote vision, that the visual axes are each parallel to our perpendicular and to each other, and when the ocular muscles are harmonious in action, types and astigmatic bars are seen in normal form. So will vision be perfect near at hand, in astigmatism, provided this due balance is maintained in these muscles; but it is evident that, in proximal vision, the interni inferior oblique and superior and inferior recti muscles must exercise increased force and act in concert.

If these muscles do this, there can be no binocular astigmatism (in the sense cited) which requires re-correction, after each eye has been separately corrected, and *in vision near at hand*. But if these muscles are not harmonious, then the plane of the rays of light remaining the same, that is, vertical, and the *axis* of *rotation* of the eye at its upper extremity, inclining to the right or left, then it follows that the relation of the axis of the cylinder and the astigmatic meridian of the cornea has been changed, and in order to restore this relation the axis of the cylinder must be made to correspond with the modified position of the defective corneal meridian.

Let the following case illustrate: In binocular and proximal vision, suppose the left inferior oblique fails to act sufficiently to maintain the axis of rotation vertical, and that the inner fibres of the left superior rectus inclines said axis, at its upper extremity, towards the nose; then the rays of light will no longer cut the cornea in its vertical meridian, but towards the temporal side of—the should-be—vertical plane of the cornea. If the defective axis of the cylinder was at an angle of 180° in vision remotum, for proximal vision the axis of the glass will have to be turned upward towards the displaced axis of rotation of the eyeball, as many degrees as *this* axis has deviated from the normal vertical perpendicular. If to 10°, then the angle would be 10° instead of 180° for the cylinder, the scale running from the temporal side. In other words, the measure of the deviation of the axis of rotation is the number of degrees of axis-displacement of the cylinder required in order to cause both sides of our "object-board" to appear parallel.

By trial the proper degree is found and in which eye the correction should be made, or if both eyes should be corrected.

In remote vision, the ocular muscles may or may not be harmonious, but if these are normally balanced in action when accommodation is at rest, it is not difficult to comprehend when the muscles supplied by the filaments of the third nerve are active, as in vision proximum, that this relation may be modified, and the *axis of rotation* so changed as to demand a re-correction for near and binocular vision. This change of cylinders does not interfere with normal vision remotum.

As these changes in the axis of the cylinders are observed in remote vision when the eyes are under the full influence of mydriatics, it results that the modification in the axis of rotation cannot be due, at least directly, to accommodation. This may be illustrated by the following case:

Miss S. L., aged 28 years. When under duboisea, she requires in the R. E. — 1.0 sp. ⊖ — 0.5 ax. 130°, and in L. E. — 0.75 ⊖ — 0.5 ax. 40°, V. 2, = $\frac{4}{4}$, and the astigmatic bars appear normal. But in binocular vision, when the "object-board" is placed at one metre, the left end of said board seems wider; when the left cylinder is turned to 30° the sides of "object-board" are seen parallel, and the floor is level. When the effects of mydriatic had passed off, a week later, the cylinders at 30° and 130° induced seeming parallelism of the "object-board" and a level floor.

A few cases will be given illustrating the change of axis of cylindrical glasses in order to obtain normal and proximal binocular vision.

Case 1.—Miss A. V. C., aged 18 years. Under duboisine she requires in R. E., — 0.5 ax. 90°, V. = $\frac{4}{4}$; and in L. E.,— 1.25 ax. 45°, V. = $\frac{4}{4}$. At one metre the "object-board" is narrower at the left end and floor inclines to her left in binocular vision. On turning the left cylinder to 60° the floor appears level and the sides of the board parallel; and the distance types and astigmatic bars are now seen normal.

Case 2.—Miss M. C., aged 27 years. Without mydriatic her case reveals that she requires in R. E., + 4.5 ⊖ + 1.25 ax. 105°, V. = $\frac{4}{24}$ and $\frac{3}{29}$ D.; and in L. E., + 2.5 ⊖ + 1.5 ax. 120°, V. = $\frac{4}{24}$, and $\frac{5}{29}$ D. V. 2, = $\frac{4}{12}$, and $\frac{5}{29}$ D. The "object-board" sides are not parallel in binocular vision at one metre or the floor level, until the left cylin-

der-axis stands at 120°, which later does not correspond with the axis of the right eye, or 75°.

Case 3.—Miss A. H. B., aged 31. Without mydriatic, requires in R. E. + 0.5 ◯ + 25 ax. 60°, V. = $\frac{4}{4}$ and $\frac{6}{30}$ D.; and in L. E. + 0.5 ◯ + 0.25 ax. 100° V. = $\frac{4}{4}$ and $\frac{6}{30}$. But binocular vision at one metre is not normal unless the axis of right cylinder is at 60°, in lieu of 80°, which latter would correspond with the axis of 100° in the left eye.

Case 4.—Miss J. R., aged 31. Under duboisine, she required in R. E. + 0.75 ax. 50°, V. = $\frac{4}{4}$; and in L. E. + 0.75 ax. 140°, V. 2 = $\frac{4}{4}$. But binocular vision at one metre is not normal when the axis is at 130° left eye. A week later, when the effects of the mydriatic had passed off, binocular vision was perfect with the angles 140° and 50° in far and near vision.

Case 5.—Mr. J. G. S., aged 18 years. Under duboisine he requires in R. E. + 0.75 ax. 40°, V. = $\frac{4}{4}$, and in L. E. + 0.75 ax. 90°, V. = $\frac{4}{4}$ = V. 2, = $\frac{4}{4}$. After the effects of the mydriatic had passed off the axis of the right cylinder had to be turned to 90° in order to obviate binocular astigmatism at one metre, and then vision remotum was perfect.

Case 6.—Mr. J. N. S., aged 34 years, requires + 2.75 ax. 75°, V. R. E. = $\frac{4}{9}$, and with + 3.5 ax. 90° V. L. E. = $\frac{4}{9}$; V. 2—$\frac{4}{9}$, and $\frac{8}{30}$. But the "object-board" was not seen parallel at one metre. On turning the left cylinder axis to 105°, binocular vision, near and far, became normal so far as glasses could accomplish, and these continued to serve him well.

Case 7.—Mr. F. G., aged 27 years, under duboisine requires R. E. + 1.25 ax. 180°, V. = $\frac{4}{4}$, and in L. E. + 0.5 ax. 180°, V. = $\frac{4}{4}$. But V. 2. while = $\frac{4}{4}$, reveals the sides of the "object-board" not parallel. On turning the axis of the right cylinder to 30° the "object-board" is seen normally and V. 2, = $\frac{4}{4}$ and $\frac{6}{30}$ D.

Case 8.—Mr. L. I., aged 19 years, without duboisine the angle for each eye was 90°, but when under this mydriatic he required in R. E. + 3.5 ax. 70°, V. = $\frac{4}{24}$, and the same cylinder in L. E. at 100° V. = $\frac{4}{24}$. The bars and types were seen normally, V. 2, = $\frac{4}{24}$ and $\frac{8}{28}$. These glasses were given and failed to give proper vision. He was given + 3.5 ax. 90° for each eye, and binocular far and near vision became normal. He was not brought under mydriatic at the second application. It is certain that this patient under the mydriatics saw in binocular vision normally, but after accommodation was fully restored vision was abnormal in each eye with the first glasses, and to secure binocular far and near vision each cylinder was changed to 90°. This result may be due to the stimulus of accommodation exciting through the filaments of the third nerve, the superior recti in each eye. It is true that with the cylinders at 90° in each eye vision remotum of the bars and types was normal. This can only be accounted for on the supposition that, *even in remote vision*, there must have been present accommodation. It is also true in this case that this ametrope developed = D. 4.5. Astigmatic hyperopia in each eye under duboisine, but accepted only a + 3.5 cylinder when the effects of the mydriatic had passed off. He, therefore, was exercising = + D. 1.0 of accommodation for distant vision, and it is probable this would stimulate the superior recti sufficiently to change the axis of rotation in binocular remote vision to 90° each eye. This man's unaided near point was 19 cm. = D., 5.3, and as he had = 4.5 D. of hyperopia, his accommodation was = + 4.5 + 5.3 = + 9.8 D., which is equal to what he should have had at 20 years of age. In correcting + 3.5 of this astigmatism he would possess an excess of accommodation = 9.8 —3.5 = 6.3 D., in proximal vision.

Case 9.—Miss M. C., aged 30 years. Without duboisine and with — 1.0 ◯ — 0.75 ax. 25°, V. R. E. = $\frac{4}{4}$, and with — 1.25 ◯ — 0.75 ax. 150°, V. L. E. = $\frac{4}{4}$, V. 2, = $\frac{4}{4}$. In binocular vision at one metre the right cylinder gave only normal vision when the axis was turned to 180° or 0°, or horizontally. Then the floor was also level, the bars alike, and types seen normally in far and near vision. After the effects of the mydriatic had passed off these results held good.

Case 10.—Miss A. B., aged 23 years. Without mydriatic and with — 0.5 ◯ + 0.25 ax. 180°, V. R. E. = $\frac{4}{5}$, and with — 1.75 ◯ — 1.75 ax. 180°, V. L. E. = $\frac{4}{6}$ and V., 2, = $\frac{4}{5}$ and $\frac{6}{30}$ D. On using duboisine the formula became—0.25 ax. 145°, and V. R. E. = $\frac{4}{5}$ and $\frac{6}{28}$; and — 1.0 ◯ — 1.25 ax. 180°, V. L. E. = $\frac{4}{5}$ and $\frac{6}{28}$, and V., 2, = $\frac{4}{4}$ and $\frac{6}{28}$. Now the "object-board" sides were parallel, the floor level, and the bars normal; but the tests for binocular vision were not normal when the axis of the right cylinder was placed at 180°. These glasses held good subsequently.

It may be claimed that the foregoing results are due to our not having found the correct axis in the monocular tests of each eye. This assumption would be untenable, because every care was taken in correcting each eye singly, both in far and near vision; but on attempting binocular vision, especially at one metre, or less, distance from the ametrope, the sides of the "object-board" were not seen parallel, nor the floor level. When the axis of one or both cylinders were changed, then, and then only, binocular vision-tests became normal. But in these cases the axes of the cylinders did not correspond.

The explanation given may not be the true solution, and accommodation may have a direct influence in the result, by changing the form of individual sectors of the crystalline lens, but the fact remains that there is such a phenomenon as *binocular astigmatism*.

If, in calling your attention to this subject, I

shall induce any to investigate it, and possibly determine the true solution, I shall rest content with the result.

Zanesville, O., May 7, 1888.

THE FORCIBLE AND IMMEDIATE REDUCTION OF OLD SUBLUXATION OF THE TIBIA.

Read in the Section on Surgery, at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

BY E. H. BRADFORD, M.D.,
OF BOSTON, MASS.

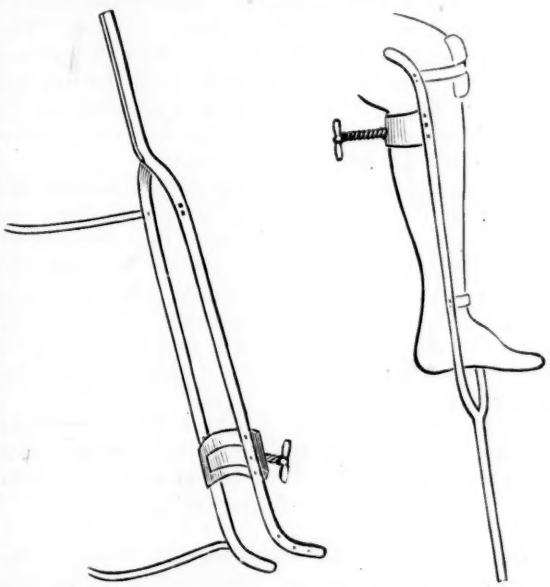
The subluxation of the tibia in chronic disease of the knee-joint is so common a deformity that no description of it is needed. It is well understood that it is caused by the reflex spasmodic contraction of the hamstring muscles pulling the tibia backward in a joint whose ligaments and capsule have been relaxed by disease. This relaxation is not often to be demonstrated clinically, as motion of the sort causes pain usually—occasionally, however, cases will be met where the inflammatory process is so subacute that the tibia can be pushed forward and back without pain, owing to the relaxed condition of the posterior capsule and the crucial ligaments. This painless condition is of course not so uncommon in the knee-joint affections occurring in tabes (spinal arthropathies, Charcot's disease).

In cases of severe tubercular osteitis, when a spontaneous recovery has taken place, with fibrous anchylosis and subluxation of the tibia, it will be found in the severest cases that the cicatricial contraction of the capsule is so firm that, on attempting to forcibly straighten the limb, the head of the tibia cannot be made to slide forward as it should, but is held back in its position of subluxation not only by the hamstring tendons, but largely by the posterior wall of the contracted capsule of the joint. If the limb is pulled straight the tibia remains subluxated. In the lighter cases the head of the tibia can be pushed or pulled forwards manually, either with or without the help of tenotomy of the hamstrings, or by means of a mechanical appliance the subluxation can gradually be corrected. In the severest cases, however, this cannot be accomplished — or only accomplished after the prolonged employment of considerable and painful force.

A moment's reflection is sufficient to show that raising the lower part of the tibia, if the latter is subluxated at the knee, will not correct the deformity; neither will a simple pull upon the leg, separating the tibia from the femur, unless there is also a pressure upon the head of the femur forward. This latter is impossible while the posterior ligament is so strong as to resist such forward pressure.

In order to determine the practicability of stretching the resisting ligaments in a normal knee-joint, experiments were made through the kindness of Prof. Dwight, of the Harvard Medical School, using on a cadaver the appliance to be described, and it was found that the tibia could be pushed forward (*i. e.* subluxated forwards) fully an inch. The first resistance encountered is the posterior crucial ligament, which becomes torn after the application of considerable force. The posterior ligament can be stretched and affords but little resistance in a normal joint.

In the distortion following chronic disease of the knee-joint with flexion at the knee and the head of the tibia subluxated, no resistance to correction will be found from the crucial ligaments which are absorbed in the morbid process, but the posterior ligaments and the posterior wall will, in cases of long standing, be found extremely firm. In such cases, before the limb can be made straight and the subluxation corrected, the contracted posterior ligaments and capsule must be stretched, enabling the tibia to slide over the condyles of the femur as in normal extension at the knee-joint. This can be accomplished in the following way: The patient being under the influence of an anæsthetic, the knee should be forcibly flexed in order to break up the intra-articular adhesion. The apparatus indicated in the accompanying diagram is then applied to the limb and pressure



from behind forwards, by means of the screw force, brought to bear upon the head of the tibia, counter-pressure being exerted on the ends of the condyles and the lower end of the tibia. The vessels and nerves lying deep in the popliteal space being well protected by the bellies of thick muscles, are in no danger of injury by such pressure, and the skin, as has been abundantly proved by osteocla-

sis, is capable of bearing without injury a great amount of momentary pressure. When the head of the tibia has been pushed forward to an extent the limb may be extended, and if it is found that some subluxation still remains, the procedure should be repeated or continued until entire correction is accomplished. After this is effected the limb should be held straight and secured against recontraction by a plaster of Paris bandage applied high up in the thigh and including the whole leg and foot. The patella and joint should be well protected by cotton before the application of the bandage. Or, instead of a gypsum bandage, an appliance of the principle of a Thomas knee splint may be used.

There is considerable pain for a day following the operation, but beyond that but little inconvenience; the patient should be able to go about using crutches in a few weeks. The plaster bandage should be worn a month or so, and for some time subsequent some form of retention appliance to prevent recontraction.

The procedure is only indicated in a limited class of resistant cases, and is manifestly contraindicated in acute cases. The writer has found it of service in the two following cases:

Case 1.—M. H., æt. 22. Caries of the knee-joint at the age of 4. Has never been able to walk since that time without the use of crutches or cane. Complete recovery took place, except that a marked amount of deformity was left. The patient was unable to place the heel to the ground and could bear but little weight upon the toe, the leg being flexed at an angle of 130° with the femur. Marked subluxation of the femur was present. The joint was perfectly stiff.

Forcible correction was applied in the way described, and the limb fixed with a plaster bandage for two months. Crutches were discontinued at the end of six months, and at the present time the patient can stand upon the whole foot; the subluxation has been entirely corrected. Flexion of but a few degrees exists (10°), and the patient is able to walk without a cane, though using one by preference.

Case 2 resembles Case 1, except that the patient is a boy of 12 and the deformity has persisted not more than four years. Correction was made as in Case 1, and with a satisfactory result.

DR. PANCOAST, of Philadelphia, thought the method proposed by the essayist an admirable one for replacement of the tibia in the form of displacement under consideration; for, unless we adopt this or some other means of pressing the tibia to the front and retaining it in that position, our efforts will be a failure. We do not have the posterior ligament much interfered with; but the great danger is not only to the blood-vessels, but also to the nerves. I know of cases where the nerves have been injured; where the hamstring tendons have been ruptured; where the arteries have been injured, and where gangrene supervened. Now, if we think that by forcing the foot forward we stretch the posterior ligament, we make a great mistake. That ligament is going to resist stretching as long as possible. Ligaments are made, not for stretching, but for the purpose of allowing motion of the joint without yielding. If you pull upon a man's arm with as much force as you can summon you will see that there is no stretching of the ligaments. They are made for inelasticity. If there is yielding of ligaments, it is because the ligaments are in a pathological condition. It must be after they have been pathological for a long time. In cases of "white swelling," synovitis of the knee-joint, the white fibrous tissue undergoes a change; it does not undergo a sudden change and it does not stretch, but during the time that it is undergoing the process of which I have spoken, it is absorbing moisture, and thus enlarges slowly, by capillary enlargement. Every one of us knows that it is a very slow process. So it is in cases of any joint. I have a case now under my care in which I am at a loss to know whether to use *brisement* force or not, or whether it would be better to reduce it by gradual pressure. It is difficult to say, too, whether cutting down upon the joint and removing a V-shaped piece of bone, and then restoring the position of the limb, is not the best procedure in most of these cases.

DR. D. MCLEAN, CHAIRMAN: I am glad that Dr. Pancoast did not allow this interesting paper to go by default. We recognize certain of these cases of subluxation which we can rectify; but to think that we can do so in old cases of long standing is, I think, too much. In those cases the structures about the joint undergo too much change, and I do not think that it is safe or rational to think that we can do much in these cases. It will take the reports of more than two cases to lead us to endorse the procedure under consideration. I am inclined to adopt what Dr. Pancoast says with reference to exsection, that it is questionable if it is not the best procedure in many of these cases.

EXOPHTHALMIC GOITRE AND ITS TREATMENT BY TINCTURE OF STROPHANTHUS.

Read before the Mississippi Valley Medical Society, at St. Louis, Mo., September 25, 1888.

BY DANIEL R. BROWER, M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM IN THE WOMAN'S MEDICAL COLLEGE; LECTURER ON THE PRACTICE OF MEDICINE IN RUSH MEDICAL COLLEGE, SPRING COURSE, CHICAGO, ILL.

In this paper I desire to invite your attention anew to the more prominent features in the clinical history and diagnosis of exophthalmic goitre, and suggest its treatment by strophanthus.

The eyes, the thyroid gland, and the circulatory system are usually all perverted by the morbific process in this disease. The order of their sequence varies, but usually the circulatory disorders are first manifested. These consist of increased frequency of the pulse, palpitation, and dilatation of the arteries. The pulse in a mild case is about 100, but it may reach such a point in frequency as is impossible to count. The frequency varies with the emotional condition. Indeed, the impression made by the heart's action is one of intense nervous excitement in the cases generally. In the early stages the heart sounds are normal, but anæmic murmurs may soon be found, and later along, organic murmurs—organic murmurs that have resulted from the dilatation of the heart. This dilatation is a condition invariably present in chronic cases. The arteries are dilated and show increased pulsation, due in part to the increased force of the heart's action, but more especially to the lowered tonus of the vessels. Pulsation is especially manifest in the carotids, thyroid arteries, and the abdominal aorta. The goitre, ordinarily, does not show itself until some time after the cardiac symptoms. It is a soft, elastic, and painless enlargement, usually symmetrical, but often the right side is more enlarged than the left. The enlargement is seldom great, and it undergoes frequent changes in size from emotional disturbances, and may be absent altogether. There can usually be detected a loud blowing murmur, and sometimes distinct pulsation in the gland itself. They are very rarely present in the ordinary bronchocele, hence are of value in differential diagnosis.

The exophthalmos usually appears soon after the swelling of the thyroid, but occasionally before it, and still more rarely may precede it and the cardiac symptoms. In some cases it is absent altogether. The degree of exophthalmos varies from a slight prominence to such an excessive protrusion that no part of the globe is covered by lids. It is usually bilateral, but not always symmetrical; it often appears earlier in one eye than in the other, and the prominence of the one may exceed that of the other.

The ophthalmoscope will show pulsation in the arteries of the retina, when this pulsation can scarcely be detected elsewhere; hence this method of examination is a valuable aid to diagnosis.

Von Graefe first called attention to another useful diagnostic sign about the eyes, and that is a want of harmony between the movements of the eyeball and the upper lid. If you direct the patient to cast the eye downwards it will be found that the upper lid does not follow the movement of the eye at all, or if it does, then abnormally.

The temperature of the body is usually elevated from .5° to 1° Fahr. A muscular tremor, sometimes coarse and jerky like chorea, and sometimes fine and regular like paralysis-agitans, is present in almost every case. It is confined in great part to the larger muscles. The head, fingers, and toes are usually exempt from this tremor. All the organs of the body sympathize more or less with the ordinary complexus of symptoms.

The gastro-intestinal area often shows loss of appetite, impaired digestion, nausea, vomiting and diarrhœa, and as a result there is marked emaciation.

The nutrition of the brain suffers much and is manifest in insomnia, headache, dizziness, weakness of thought and memory, irritability of temper, neuralgia; and this disordered nutrition not rarely leads up to insanity.

The respiratory system shows disorder in cough, oppression in breathing, and intercostal neuralgia.

The diagnosis of exophthalmic goitre, when the three classical symptoms are present, is easy, but in cases where the exophthalmos is absent, and where both goitre and exophthalmos are scarcely perceptible, there will be found great difficulty. In these cases the ophthalmoscope, as above mentioned, is a valuable aid; and the milliampére metre will also give valuable information, as first suggested by Dr. Vigorius, by determining the condition of the electrical resistance, which in this disease is markedly diminished.

The morbid anatomy and pathology is no nearer solution than it was in 1825, when Páry first described its symptoms. The various theories that have been proposed have been summarized in an excellent article by Dr. A. A. Eshner.[1] He reaches a conclusion that seems to be the most reasonable: That the symptoms are due to a disorder, functional in character, in the medulla oblongata, involving the cardio-inhibitory centre, the vaso-motor centre, the respiratory centre, and the other important centres located in that part. A careful consideration of the physiological functions of these centres will enable us to work out without much difficulty the pathogenesis of the disease.

The prognosis should be guarded. The disease may not only terminate fatally, according to von Graefe, in about 12 per centum of the cases, but not infrequently terminates in insanity. A great majority of the cases will certainly, if recognized early, yield to treatment. Early diagnosis is exceedingly important, for when structural changes have taken place in the heart and thyroid, the prognosis is unfavorable.

The treatment of this disease has been very unsatisfactory. The drugs in ordinary use have but little influence upon it; but I think we have found in strophanthus a remedy that in some cases is certainly of great value. I have administered the tincture of strophanthus in three cases with benefit. In the first case, a man 21 years old, who had been under the ordinary treatment

[1] "The Polyclinic," Philadelphia, July, 1888.

—tonics, alteratives, rest, electricity, for three months without any abatement of symptoms—indeed, with a steady progression of the disease, I commenced the use of tincture of strophanthus, 2-drop doses every six hours. The pulse at this time was so rapid that I could not count it. The dose was gradually increased, and when 10 drops were given the circulation was under control; pulse, when quiet, was 85 per minute. The exophthalmos and goitre gradually disappeared, and in about four weeks he was well. The strophanthus was gradually withdrawn and tonics substituted. This result was reached about eighteen months ago, and the patient continues well.

The second case was a female, aged 52, in whom the disease had continued about eighteen months. The strophanthus was given to her in about the same manner and about the same dose was necessary. An equally good result was obtained.

The third case has been under observation about ten days only, but the same influence is manifest as in the other two cases.

Dr. Norman Bridge, of Chicago, has administered the drug in two cases at my suggestion. In one case no effect was observed; in the other case he combined tonics with the strophanthus, and the patient made a rapid recovery.

Dr. E. Fletcher Ingals, of Chicago, tells me that he has administered it in one case, pushing the dose to ten minims, three times a day, with benefit. In his case, he was using at the time he began the strophanthus hypodermic injections of carbolic acid, but he attributes the improvement in the case principally to the strophanthus.

I do not advise reliance solely upon strophanthus, but ordinary hygienic rules must be observed, such as the avoidance of fatigue, physical and mental excesses, a careful, regulated diet, attention to bowels and skin. I also advise the use of ordinary tonics, and the application of galvanic electricity to the cervical sympathetic nerves.

I also desire to call the Society's attention to the seeming value of strophanthus in other diseases that sometimes, at least, have their origin in disordered nutrition of the medulla, such as epilepsy, megrim, and, through its influence upon the medulla, as an agent in controlling maniacal excitement, such as acute delirious mania. I feel confident that it will materially assist in relieving the febrile state, as well as in protecting the heart against the depressing influences of the ordinary remedies used for this purpose.

THE BILLINGS MURDER TRIAL. A MEDICO-LEGAL QUESTION.

BY D. M. WICK, M.D.,
OF NEW HARTFORD, IOWA.

On the evening of the 21st of last December W. S. Kingsley, a young lawyer of Waverly, Iowa, was found dying on the floor of his office with a bullet hole in his head. His left hand clinched tightly certain papers, while his right hand lay open, a few inches from right thigh, and a revolver, with two empty chambers, was found under right leg. A post-mortem examination was made. The ball (32) entered the skull at a point between the root of right nasal bone and eyebrow, passing to the right of the cristi galli, through right brain, circle of Willis, rupturing vessels, and lodged a half inch within left brain. Length of wound, five to six inches. The ventricles and cavities were filled with clotted blood.

Death occurred within ten minutes. M. E. Billings was arraigned as the murderer.

The State attempted to prove that a bullet wound in the brain, causing instantaneous rigor mortis of the left hand, would also cause the same condition in the right hand, providing the revolver was held in this hand at the time the ball was fired. In support of this, the doctors making the post-mortem were put upon the stand. Counsel, in pleas, also read from Wharton & Stillé's Medical Jurisprudence, Sec. 722, Vol. 2, 4th edition. The defense read numerous citations from various medical works, to show that the brain has certain motor tracts controlling the actions of certain muscles; that by vivisection, a portion of the brain of a living animal may be removed and certain results follow; this wing, or that leg, or that set of muscles are affected.

Medico-legally, the above is a nice question to decide. Evidently, both the State and defense attempted to solve this problem by considering rigor mortis produced through the agency of the nervous system, either from injury to the nerve centres or from blood-clots in the ventricles.

Tidy quotes Beclard and Hermann, stating rigor mortis is altogether independent of the nervous system, and further states that the nerve supplying the muscle, or indeed the removal of the entire brain and spinal cord during or before its occurrence, in no way affects it. Because the dying man was found with the left hand firmly grasping papers, while the right hand was open and near the revolver, is there any evidence, in a medico-legal view, that he fired the fatal shot himself and then let go the weapon? or was it placed under the right leg by his murderer?

OVERWORK ON RAILWAYS.—It is stated that the Board of Trade of England have ordered the principal railway companies to supply them with returns showing every occasion during two typical months this year and last on which any man concerned with the working of the traffic was on duty for more than twelve hours continuously. It is believed that the Government contemplate the introduction of a measure dealing with the subject.

MEDICAL PROGRESS.

ANEURISMS AND TUBERCLE-BACILLUS.—In a paper read before the Académie de Médicine, M. GERMAIN SÉE said that he had been struck by the fact, especially since the discovery of the tubercle-bacillus, that patients suffering from aneurism of the aorta often become tubercular, and die of pulmonary phthisis, attended with the formation of cavities, and progressing slowly without fever. This was observed by Stokes, and numerous cases can be found in the records of Pathological Societies. Out of 24 cases of aneurism under his own care, 7 were thus affected with pulmonary tuberculosis. It is now well-known that patients with cardiac affections are not exempt from phthisis. C. Paul has shown the frequent occurrence of phthisis in cases of narrowing of the pulmonary artery. Aortic aneurism must now be considered one of the agents favoring the development of the tubercle-bacillus. In aneurism, from the disturbance of the circulation there is a stagnation of the venous blood, and diminished activity of the gaseous exchanges between the gases of the blood and those of the atmosphere. In this internal gaseous medium (in the alveoli of the lungs and smallest air-passages) the bacillus appears to multiply when it enters the body by the respiratory tract. In aneurism the air is imperfectly renewed in the whole of the lungs, just as in normal conditions it is imperfectly renewed in the apices as compared with the rest of the lungs. In short, excess of oxygen hinders, deficiency favors the development of the bacillus. In this way the multiplication of the bacillus is accounted for; the way in which it penetrates into the pulmonary parenchyma in patients of all ages who are affected with aortic aneurism, remains to be shown.

Lately it has been found that ulcerative endocarditis, or even simple endocarditis, with vegetations is caused by a staphilo-coccus; rarely by a strepto-coccus; more rarely still by the tubercle-bacillus. The analogies between endocarditis and endarteritis allow us to suppose the existence of an endarteritis, due to the presence of a microbe. Are the lesions that affect the internal and middle coats of an artery which has undergone aneurismal dilatation caused by a bacillus? If this question is answered in the affirmative, one can easily explain how the bacillus is washed away from its position in the aneurismal wall to the lung and there multiplies.

In the treatment of aneurism M. Sée relies on iodide of potassium, the mode of action of which he explains as follows:

1. It relieves the dyspnœa due to catarrhal affections of the bronchial tubes by liquefying the effused secretions.

2. It aids the intra-pulmonary circulation, and diminishes venous stagnation.

3. The volume of the aneurismal tumor is diminished by contraction of the adventitious coat and the tissues surrounding it.

4. By reducing the size of the tumor, the pressure on the adjacent nerves is relieved, and pain therefore mitigated.

He gives the iodide in the amount of 30 grains daily, divided into three doses, to be taken at the beginning of a meal.

For the relief of pain he has found subcutaneous injections of antipyrin most efficient. When a cardio-vascular tonic is required he has obtained good results from sulphate of sparteine, and rejects altogether caffeine and digitalis.—*Bulletin de l' Académie de Médecine*, Aug. 14, 1888.

GLYCERINE AS A SURGICAL DRESSING.—MR. CHARLES E. S. FLEMMING says: We want a dressing that is non-irritating, antiseptic, will not become adherent, will allow free drainage, will not allow the discharges to get hard and caked, will be freely miscible with the discharges, and not evaporate at any temperature of the body nor occupy the place intended for the discharges. We have, I think, what we want in the glycerine of starch of the Pharmacopœia, with some antiseptic dissolved in it; for example, corrosive sublimate 1 in 1,000 parts. The starch, added for convenience of applying the glycerine, in addition forms a non-irritating surface to apply to the wound and is a mechanical protection; it is most conveniently applied thickly spread on one or more layers of Gamgee tissue or some absorbent wool. This application is not irritating, is antiseptic, and is removed with the greatest ease from any wounded surface. As glycerine is freely miscible with the discharges it is quite absorbent, discharge in passing into and through the dressing becomes mixed with the glycerine, and as this does not evaporate it is thus prevented from becoming caked or hard and dry. The glycerine, itself hygroscopic, does not usurp the place of the discharge nor prevent the free escape of the watery vapors. Such a dressing after several days will be found moist, soft, flexibe, and easily removed; it is heavy with the quantity of fluid it contains, a proof of its absorptive powers. The discharges are not collected in one spot. Next the wound there is a jelly-like layer which is easily removed, having a clean surface, and the sutures, if any, distinct and easily taken out, not being caked with blood.

In my own practice I have found healing of incised wounds under this dressing quick and accurate, and the dressing of lacerated and contused wounds is absolutely painless and very quick; I have found it of much benefit in those chronic granulating wounds which every dressing seems to irritate, and have applied it with success as a

daily dressing in two cases of purulent conjunctivitis. I have not had an opportunity of trying, but should think glycerine and starch might be used with advantage in skin grafting.—*British Medical Journal*, Sept. 22, 1888.

CONNECTION BETWEEN ALBUMINURIA AND DISEASE OF THE PLACENTA (*Schmidt's Jahrb. d. Mediz.*)—Fehling has recently drawn attention to to connection between nephritis and disease of the placenta, relative to death of the fœtus, and further investigations since then have confirmed his (Fehling's) views. WIEDOW refers to a series of old published cases which, without having been properly explained then, speak for the relation of both diseases; Simpson, of Edinburg, regarded already early in the year 1860 albuminuria as the cause of disease of the placenta. Lately cases of this kind have also been described by Cohn, to which are added in Wiedow's treatise further observations from the "Freiburg Clinic." Mostly eclampsia intra or post partum, morbid kidney of pregnancy, were in question; once the necropsy revealed contracted kidneys; dead or extremely insufficiently nourished children and with it regularly anatomical changes of the placenta were found. Microscopically these appeared as numerous yellowish-white nodes, belonging either to the maternal portion of the placenta, or being found on the surface. Microscopically, according to Wiedow's researches, they represented the result of a coagulation and necrosis of the follicular epithelium. That there exists a connection between albuminuria and disease of the placenta is scarcely to be doubted; but difficult to answer is the question whether the change in the placenta is the consequence or cause of the albuminuria. For some cases the former view will hold good, but not for all. Sometimes normal placentæ are found in spite of nephritis, sometimes the death of the child has already occurred before irritation of the kidneys presents itself, or the changes in the placenta are of an earlier date than the albuminuria. Finally it is unexplainable that, in cases of twins, one placenta is found diseased and the other normal. The proper final explanation raises still great difficulties and must be reserved for further investigations.—*American Journal of Obstetrics*, October, 1888.

PICROADONIDIN, THE ACTIVE PRINCIPLE OF ADONIS VERNALIS.—PROF. PODVYSOTSKI, of Kazan, publishes in the *Meditsinskoe Obozrênie* some researches upon the active principle existing in Adonis vernalis. He finds by chemical analyses of the entire plant there is an amorphous substance of the nature of a glucoside (picroadonidin) which is the active principle, but that together with this there are present an orange-yellow substance (adonido-quercitin), a sugar (adonido-dulcitum), which crystalizes in beautiful prisms, a physiologically inactive glucoside, and an acid already pretty well known, and existing in aconitum napellus and some species of equisetum, and therefore called aconitic or equisetic acid, $C_6H_6O_6$. Hitherto all attempts to isolate the active principle of Adonis vernalis have resulted in mixtures of the several substances named in various preparations, so it is not surprising that the so-called adonidins of different observers presented very dissimilar properties. Picroadonidin has an extremely bitter taste. It is easily soluble in water and alcohol, and slightly so in chloroform. It possesses all the physiological properties of the plant itself in a very high degree.—*Lancet*, October 13, 1888.

USE OF ANTIPYRIN IN THE NASAL PASSAGES.—DR. F. WHITEHILL HINKEL, of Buffalo, draws the following conclusions from clinical experience:

1. A solution of antipyrin possesses hæmostatic properties when sprayed into the nose, though not superior to cocaine.

2. Antipyrin in about 4 per cent. solution may be used upon the nasal mucous membrane with temporary relief to occlusion from engorgement of the turbinates, and with sedative effects upon irritable states.

3. It is most effective where the element of irritation exceeds that of inflammation.

4. It presents an advantage over cocaine in not producing local numbness and dryness, and in the absence of the general stimulating properties of cocaine, causing sleeplessness, headache, etc. In cases such as hay-fever, where an agent of relief is used for long periods, antipyrin as a nasal spray is less likely than cocaine to produce constitutional disturbance or to lead to a "habit."

5. Antipyrin presents the disadvantage of causing more or less severe smarting, and of being unequal to the relief of severe inflammation or extreme occlusion of the nares.

6. Its antiseptic and stimulant properties will probably make it serviceable as an application to fresh wounds and to granulations and ulcerations in the nasal chambers.

7. Combined with cocaine, it increases the local action of the latter, enabling it to be used in weaker solution.—*N. Y. Med. Journ.*, Oct. 20, '88.

INJECTIONS OF WARM WATER IN EPITHELIOMA OF THE CERVIX.—DE TORNERY draws the following conclusions:

1. Injections of warm water at 102.2° to 104° F., for about half an hour, twice a day, morning and evening, disinfect the vagina, cleanse it, and considerably diminish the ichorous discharge.

2. These injections diminish the loss of blood, and improve the general health.

3. In the majority of cases the pains are diminished, so that there is less need of injections of morphine.—*France Médicale*, No. 86, 1888.

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SATURDAY, NOVEMBER 3, 1888.

"HOW FAR CAN LEGISLATION AID IN MAINTAINING A PROPER STANDARD OF MEDICAL EDUCATION?"

Such is the title of a paper read before the American Social Science Association, at the annual meeting held at Saratoga on September 5, by MR. W. A. PURRINGTON, Counsel of the Medical Society of the County of New York. This paper, says the author, "is a statement of what I conceive to be general principles and fair inferences from an experience of some years, as counsel of the medical societies of the State and County of New York, in drafting and securing the enactment of the present by no means perfect medical statute of the State, and enforcing in the County of New York obedience to its provisions."

At the beginning of last summer Mr. Purrington sent out a number of circular letters of inquiry upon the general topic of medical legislation; "almost every reply to the circulars expressed approval of some system of regulating by statute the practice of medicine; and the opinion was also strongly expressed that such legislation as had been already, crude and imperfect though it is, has perceptibly improved the standard of medical education."

At the beginning of his paper the author lays down certain postulates. In the first place, he says, such legislation as he was about to consider was considered by the courts as both constitutional and highly desirable. In the second place, the principle, and the only principle upon which such legislation can be justified is *salus populi*,—the principle of security, of self-protection against fraud and ignorance. It is not the principle of protection for the medical profession that justifies such legislation, but protection of the public. Mr. Purrington goes on to speak of the evils of charlatanry, and then of the legal remedies against the immoralities of quackery, and of the existing statutes that recognize the diploma as conferring the right to practice. "While it may be perfectly true," he says, "that the probabilities are greatly in favor of a beneficial result from these laws in limiting the number of uneducated practitioners of physic, it is also quite as true that a fictitious value is given by such legislation to a mere piece of parchment, and a standard set which cannot be higher than that of the poorest college whose diploma is recognized as a license; and it is quite possible that in many cases persons of fair attainments acquired through extra-collegiate study may be debarred, temporarily at all events, from a right possessed by a far more ignorant graduate of some contemptible school incorporated by a too complaisant Legislature." It is seen, then, that a statute must not only be right in its purposes, but also that it must neither work greater evil than it prevents, nor be impracticable of enforcement. The chief purpose of legislators in times past, Mr. Purrington points out, was the punishment and remedy of evil already committed; but the tendency of modern times is towards prevention—to use a homely simile, locking the door before the thief gets in and the property is taken out.

Mr. Purrington now goes on to discuss the question, within what limits is it wise to exercise the police power of the State to regulate the practice of medicine, and how far can its exercise aid in maintaining a proper standard of medical education? The law, says Mr. Purrington, has nothing to do with medical theories. "The utmost it can do successfully is to prescribe that none shall practice medicine except persons educated in those branches of science that all admit are essential to an understanding of morbid conditions of our species, and possessed besides of a fair general education. It cannot prohibit the practice of sectarian medicine and such delusions as the mind-cure and Christian science, for this would be an assumption by the law to prescribe what system of healing shall be followed; and it might as reasonably command—as, indeed, I believe it does in Mormondom—that all the sick should be treated by

anointing with oil in conjunction with prayer by the elders." Certainly, coming from one learned in the law, this is a surprising statement; and when we remember the principle upon which he says medical legislation is justified—*salus populi*—it does not fall short of being paradoxical. True, the law cannot prohibit theories and opinions of mind-curers and Christian scientists; it cannot prohibit thought; but to say that it cannot prohibit certain practices is a very different matter. Mr. Purrington continues: "If a man who has passed his examinations in such branches as above indicated (the various branches of medicine) shall conclude to adhere uniformly in practice to the doctrines of *similia* or of *contraria*, or even to the profundities of Mumbo Jumbo, or mind-cure, the law cannot prevent him. For his errors, he will be liable always in damages, no matter what system he adopts; and with that we must be content." Hence we must conclude that should the makers of the law, the people, finally come to the conclusion that the "profundities of Mumbo Jumbo" are dangerous, and subversive of the very thing that medical legislation must conserve—*salus populi*—it cannot prohibit such practices, but must be content with holding the practitioner in damages for his errors!

The author, in speaking of the ways in which legislation can aid in maintaining a proper standard of medical education, points out that it can do so chiefly by vesting the licensing power in a central Board of Medical Examiners, and says that the law should not recognize any diploma as of itself conferring the right to practice medicine; the possession of a diploma may be required as antecedent to examination, but it should not be allowed to take the place of such examination. "It is to the interest not only of the public, but of every medical college of high standard, that the diplomas of what have become known as 'diploma mills' shall be deprived of the licensing power, which is their sole value." Legislation, he thinks, may aid in raising the standard by fixing a minimum age under which no one shall be allowed to practice medicine; by requiring a fixed term of study of certainly not less than two graded years (did he mean not less than *three* years?); by requiring proof by examination or certificate that each candidate for license had studied before beginning his professional career at least those branches of a general education in which law students are examined in this State (New York) before they commence their legal studies (the reader will of course note the very close relationship between the practice of law and that of medicine, and the similarity of the preliminary educations required for them!); by declaring that no medical school—including in the terms schools of dentistry, pharmacy, and mid-wifery—shall be incorporated by special act, and providing a general law for the incorporation of such schools only upon proof made of the possession by the incorporators of sufficient capital—not less than a hundred thousand dollars—and teaching plant to justify the belief that the school will be capable of exercising faithfully its franchises; the provision of a minimum course of medical study. We cannot agree with Mr. Purrington that the regulation of all details of examinations should be left to the board of examiners. A good law should require that the colleges hold certain examinations during the course and at the expiration of the term of medical study, besides the examination for license by the medical examining board. Nor does the author give any good reason why "it would be most wise to omit any examination in those obscure topics of therapeutics and materia medica."

We have not space for more extended consideration of this paper. Coming from a member of the bar, and the Counsel to the New York County Medical Society, it will most probably have much weight, and is worthy of consideration. The paper seems, unfortunately, to have been prepared hastily; there is nothing to show that the medical laws of other countries had been carefully studied, with the view of grafting their better elements into our laws if possible. "There is too much of the *laissez faire* policy exhibited," is the criticism of a prominent member of the Chicago Bar. With our best colleges demanding three years, and the colleges of foreign countries demanding four years of medical study, it is very late to speak of "not less than two graded years." We hope to see the day when medical legislation in this country will have gone farther in raising the standard of medical education in this country than the point beyond which the author says it would not be wise for the legislation to go.

DR. SOMMER has been appointed Prof. Budge's successor to the Chair of Anatomy at Greifswald.

THE PATHOLOGY OF PERNICIOUS ANÆMIA.

DR. WILLIAM HUNTER has recently concluded, in the *Lancet*, a most interesting paper on this subject, being the record of a series of investigations made with the object of throwing some light on the pathology of the disease called *progressive anæmia* or *pernicious anæmia*. These investigations were partly clinical and partly pathological. It must be said that Dr. Hunter has occupied himself with a most important task, when we remember the interest taken in this affection since Addison called attention to it.

Space is wanting for more than a summary of the results of the investigations, and some short comment upon them. In the first place, he concludes, pernicious anæmia is to be regarded as a special disease, both clinically and pathologically. It constitutes a distinct variety of idiopathic anæmia. *Second.* Its essential pathological feature is an excessive destruction of blood. *Third.* The most important pathological change to be found is the presence of a large excess of iron in the liver. *Fourth.* This condition of the liver serves at once to distinguish pernicious anæmia *post-mortem* from all varieties of *symptomatic* anæmia, as also from the anæmia resulting from the loss of blood. *Fifth.* The blood-destruction characteristic of this form of anæmia differs both in its nature and its seats from that found in malaria, in paroxysmal hæmoglobinuria, and other forms of hæmoglobinuria. *Sixth.* The view can no longer be held that the occurrence of *hæmoglobinuria* simply depends on the quantity of hæmoglobin set free. *Seventh.* On the contrary, the *seat* of the destruction and *the form assumed by the hæmoglobin* on being set free are important conditions regulating the presence or absence of hæmoglobinuria in any case in which an excessive disintegration of corpuscles has occured. *Eighth.* In paroxysmal hæmoglobinuria the disintegration of corpuscles occurs in the general circulation, and is due to the rapid dissolution of the red corpuscles. *Ninth.* In pernicious anæmia the seat of disintegration is chiefly the portal circulation, more especially that portion of it contained within the spleen and liver, and the destruction is affected by the action of certain poisonous agents, probably of a cadaveric nature, absorbed from the intestinal tract.

Thus it will be seen that Dr. Hunter's investigations seriously disturb some existing illusions in regard to the pathology of pernicious anæmia —among others, that the affection is dependent upon some impairment of the normal process of blood-formation. The investigations show, also, that pernicious anæmia is quite distinct from the anæmias secondary to and due to wasting diseases, loss of blood, or diseases of the organs of nutrition.

LABORATORIES FOR BACTERIOLOGICAL AND ORIGINAL INVESTIGATION.

The Trustees of the Hoagland Laboratory announce to the medical profession of Brooklyn, N. Y., the completion and equipment for practical work of their laboratory at the corner of Henry and Pacific streets. Dr. Geo. M. Sternberg, the Director, being absent for further prosecution of his investigation into the causes of yellow fever, by order of the President, the course of lectures on bacteriology previously announced will be postponed until his return. But George T. Kemp, Ph.D., Johns Hopkins University, has been appointed as Associate in Bacteriology and Physiology, and with his assistance practical instruction in bacteriology will be given during Winter and Spring.

With fairly well-equipped laboratories for instruction and practical research in bacteriology, physiology and pathology at the Johns Hopkins, Baltimore ; at the University, Pennsylvania ; the Carnegie, New York ; the Hoagland, Brooklyn ; the Harvard, Boston ; the Chicago Medical College, Chicago ; and some others, it can no longer be claimed that American students are obliged to cross the Atlantic either for instruction in these departments or for facilities for prosecuting original researches.

AMERICAN MEDICAL ASSOCIATION.

The Fortieth Annual Meeting of this Association will be held at Newport, R. I., on Tuesday, the 25th of June, 1889, instead of the *first* Tuesday in June, as appointed at the meeting in Cincinnati, for the reasons previously mentioned in THE JOURNAL. Next year will also be the 250th anniversary of the settlement of Newport, and all circumstances favor a meeting of the Association of unusual interest. The Rhode Island State Society is cordially coöperating with the Local Committee of Arrangements. We are informed that acceptances have been received from each of the

gentlemen elected to deliver the general addresses at the meeting in Newport. The Address in Medicine will be given by Professor Wm. Pepper, of Philadelphia; the Address in Surgery by Professor P. S. Connor, of Cincinnati; and the Address in State Medicine by Professor W. H. Welch, of Baltimore.

The following constitute the Local Committee of Arrangements: H. R. Storer, Chairman; W. Thornton Parker, Secretary; C. F. Barker, M. E. Baldwin, C. A. Brackett, J. P. Curley, P. F. Curley, J. P. Donovan, H. Ecroyd, Jr., V. M. Francis, T. A. Kenefick, G. M. Odell, F. H. Rankin, W. C. Rives, Jr., S. H. Sears, W. S. Sherman, H. E. Turner.

Associate Committee, appointed by the Rhode Island Medical Society, G. D. Hersey, W. H. Palmer, G. T. Swarts, all of Providence.

THE AMERICAN ACADEMY OF MEDICINE.

The next annual meeting of this Society is to be held in New York city on the 13th and 14th of November, 1888. It was organized twelve years since, for the very laudable purpose of encouraging a higher standard of literary and scientific education on the part of those who wish to enter upon the study of medicine. As one of the influences favoring the accomplishment of this object, a constitutional provision was adopted making the possession of the degree of Bachelor or Master of Arts, received after a systematic course of study, and of the degree of Doctor of Medicine, followed by three years of practice, necessary conditions of eligibility for membership in the Academy. It was the first, and we think the only attempt that has been made to sustain a National medical society, membership of which was to be restricted to such members of the profession as had received prior to commencing the study of medicine a true collegiate general education.

It was thought by its founders that the establishment of such a society would be a constant stimulus to the ambition of young men intending to enter the medical profession to so extend their general education as to render themselves eligible for membership in it; and that the reports, papers, and discussions elicited at the annual meetings would do much to develop and direct public sentiment on the subject of a higher standard of education and mental discipline as a preparation for professional life. We hope the meeting in New York will be a large and profitable one, and that it will venture to select Chicago as its next place of annual meeting, or at least some city in the interior valley of the Continent.

PHYSIOLOGY IN THE PUBLIC SCHOOLS.

The readers of the *Century* will remember the very amusing article that appeared about a year ago from the pen of Samuel L. Clemens (Mark Twain), on the answers by public school children to examination questions in the public schools. Several months ago the *Popular Science Monthly*, in commenting on the abuses, educational and otherwise, of the public schools, declared that it was now demonstrated that the public school system should be abolished. In the August number of the *Popular Science Monthly* was an article by "a teacher" on "Physiology in the Public Schools," containing a large number of answers to examination questions. This article shows that physiology is as badly taught in the English as in American public schools, and that the misinformation in regard to the subject of study is due to too much learning by rote without comprehension of the meaning of the terms employed—and to bad teaching; possibly, also, to the fact that children are set at physiological studies at too early an age. And we must agree with what the *London Architect* says in regard to this matter: "These exercises may be thought amusing, but it should be borne in mind that every word represents more or less pain to some unhappy child in endeavoring to recall ponderous words which were without meaning. Education in sanitary matters is desirable, but, as it is at present conducted in public schools, it must injure children's minds by habituating them to the use of words which they cannot understand." Certainly, it is a serious blunder to lumber up the mind of a child with words that carry no meaning. The words of the Wise Man may be applicable here: "In all thy getting get *understanding*."

MEDICAL STATISTICS OF RUSSIA.

The Statistical Annual of the Russian Empire for 1884–85 gives the total population (of Russia in Europe?) as 108,787,235. In 1885 there were 4,597,441 births, with an excess of about 133,000 males; 129,700 children were illegitimate. The

deaths numbered 3,291,824, with an excess of females. The net increase in population was therefore 1,305,617. There were 42,946 violent deaths, including 3,450 homicides and 2,494 suicides.

The deaths from various diseases were: 153,559 from febrile affections; 11,506 from small-pox; 8,505 from scarlatina; 19,320 from diphtheria, 8,024 from measles; 2,123 from pertussis, and 28 from *cholera nostras*. Of 589,274 cases of zymotic disease, 86,229 terminated fatally.

The number of hospitals in Russia in 1884–85 was 867, containing 57,825 beds. To these must be added 17 hospitals containing 8,584 beds for the use of foreigners.

The number of cases of syphilis in Russia in the period mentioned was 399,951. The number of vaccinations practiced was 2,300,404.

The medical *personnel* included, in 1884, 3,302 sanitary physicians, 7,653 physicians of inferior rank, and 3,170 midwives. The eight universities had 4,459 students of medicine.

One is forcibly struck with the insufficiency of the number of medical men for so large a population, with the small number of medical schools, the very large number of medical students as compared with the number of practitioners, and with the value that the Russian Government seems to attach to vital statistics. In spite of their small number the medical profession of Russia have added much that is valuable to the literature of medicine, and would have added much more that is accessible but for their apparently insurmountable language.

EDITORIAL NOTES.

PROFESSOR G. RUGE, of Heidelberg, has been elected Professor of Anatomy in the University of Amsterdam.

A MORGUE FOR LONDON.—A French contemporary states that there is a project for the establishment in London of a morgue similar to that in Paris.

DR. HENRY GRADLE, of this city, we are pleased to say, was acquitted of malpractice in the recent suit against him. We hope to have an account of the case in an early issue.

DR. JOSEPH SARGENT, a well-known practitioner of Worcester, Mass., for almost half a century, died of pneumonia on October 13. He was born in 1815, and graduated from Harvard Medical School in 1837. He was a man of great public spirit, and his loss will be severely felt by both the profession and the public.

"LAPAROTOMY IN THE TREATMENT OF INTRAPERITONEAL INJURIES," an address delivered before the Medical Society of London by SIR WILLIAM MACCORMAC, has been translated into German by Dr. Thamhayn, Volkmann's assistant, and is issued as one of the numbers of Volkmann's *Sammlung Klinischer Vorträge*.

DURING the recent visit of DR. MORRIS H. HENRY, of New York, to Turkey, he was most kindly treated by the surgeons of Constantinople, and was honored by His Imperial Highness, the Sultan, with the Imperial Order Commander de l'Osmanie, and a present of jewels. This is a gratifying acknowledgment of the interest taken by foreigners in American surgery.

PHARMACY IN RUSSIA is now receiving the attention of the Government. A plan is being prepared by which the status and qualifications of a Master in Pharmacy will be equal to that of the Russian Doctor of Medicine. The Master in Pharmacy will have to spend eight semesters at a university. The two sexes are to have equal privileges. The *Apothekerverein* of Germany has set on foot a movement looking to the same ends.

GYNÆCOLOGICAL SOCIETY OF CHICAGO.—At the annual meeting of this Society, held at the Richelieu Hotel on October 19, the retiring President, Dr. Henry T. Byford, delivered his Annual Address, and the following officers were elected: President, Dr. Charles T. Parkes; First Vice-President, Dr. Edmund J. Doering; Second Vice-President, Dr. E. C. Dudley; Editor, Dr. W. W. Jaggard; Secretary, Dr. Edward Warren Sawyer; Treasurer, Dr. Frank E. Waxham.

OHIO STATE SANITARY ASSOCIATION.—The Sixth Annual Meeting of this Association will be held in the City Hall, Canton, Ohio, November 14th and 15th, 1888. A full and important programme of work has been arranged for the two days' session. The first session will commence at 10 A.M. of the 14th, and the closing meeting will begin at 1 P.M. of the 15th. Arrangements have been made for commutation of railroad fares, but for further information address the Secretary, R. Harvey Reed, M.D., Mansfield, Ohio.

SOCIETY PROCEEDINGS.

Philadelphia County Medical Society.

Stated Meeting, September 12, 1888.

THE PRESIDENT, J. SOLIS COHEN, M.D., IN THE CHAIR.

DR. J. SOLIS-COHEN read a paper on

SYPHILIS OF THE LARYNX, TRACHEA, AND BRONCHI.

Syphilitic processes not only injure the structural integrity of the larynx and trachea directly but, by their location in the regions occupied by the origin and course of nerve supply, they lead to denutrition of the tissues generally, and to serious motor impairments of the muscles of the larynx. The distinctions between secondary and tertiary syphilis, as manifested in the upper air-passages, are so irregular and uncertain, that many writers prefer the terms recent and tardy. In fact, however, secondary lesions are sometimes tardy and tertiary lesions sometimes precocious. Secondary lesions are sometimes present as the sole manifestation of that period. Sometimes they precede cutaneous manifestations. Most frequently they occur in subjects already affected with what are known as mucous patches in other portions of mucous membrane, or with early cutaneous syphilides.

Pathology.—The earliest and far most frequent manifestations are subacute and diffusely hyperæmic conditions of portions of the mucous membrane, of varied extent and intensity; an erythema with turgescence, but without hypersecretion, occurring within from six to ten weeks after infection. The affected surface exhibits at first the usual rose-color of congestion, but, as stasis, infiltrations, and hæmic transudations occur, it becomes more or less livid in patches which present mottled or flaky discolorations. Superficial erosions often ensue. Occasionally deep-seated ulceration occurs. Sometimes paresis of the muscles of the larynx is produced. The erosions may be due simply to denutrition of epithelium from mere pressure by infiltrations, or to disintegration of a characteristic proliferative lesion known as the papule or mucous patch, by some termed broad condyloma, a product, according to Virchow, of the same histological character as the indurated chancre and the various gummy formations, namely, an infiltration of tissue with nucleated embryonic cells. These papules are characteristic, but by no means frequent syphilitic products in the larynx, and are so infrequent in the trachea that their occurrence there is denied by authorities the very highest. They are multiple recurrent lesions, almost invariably associated with mucous patches on other mucous membranes; usually lasting from three to five weeks, and sometimes much longer. They are observed from within a few weeks to a few months after infection; sometimes earlier, occasionally as late as eighteen months. They are far the more frequent in tuberculous subjects who have contracted syphilis.

The erosions which occur on the surface of the papules or on simply erythematous mucous membranes are usually superficial, but may extend through the mucous membrane and beneath it, under bad hygienic conditions. Under slight provocative exposures to cold and wet, fluxionary œdema sometimes takes place in their vicinity, occasionally to such an extent as to be menacing to life. The epiglottis often becomes very much thickened, the vocal bands thickened and dentatedly eroded. There seems to be no tendency for secondary lesions to extend from the larynx to the trachea.

Tertiary lesions come under notice most frequently in the stage of ulceration, usually following the liquefaction of gummous nodules, gummous infiltrations, or true gummata, as may be. The epiglottis is the most frequent seat; so frequent, that its lingual and lateral ulceration has been erroneously deemed pathognomonic of syphilis; but destructive lesions may occur in every portion of the larynx. The ulceration is both serpiginous and deep-seated, and, while more commonly unilateral, there seems practically to be little limit to its phagedenic destructive ravages under unfavorable conditions, as it destroys and penetrates all the tissues, soft and cartilaginous. Slight provocation may produce fluxionary œdema in this stage also, which may be of the most serious character. Serious hæmorrhages may occur from penetration of blood-vessels, and apnœa may ensue from incarceration of fragments of necrosed cartilages and soft tissues. Ulceration may be attended with proliferative vegetations which may occlude the air passages. Superficial ulceration may heal with moderate cicatrization which eventually becomes hardly noticeable. Deep and extensive ulcerations heal under peculiar whitish, lustrous, stellate, retractile cicatrices, similar to those which follow burns. Instead of cicatrizations, adhesions may take place between contiguous raw surfaces, and strictures of various kinds be formed in consequence.

The gummous lesions preceding these ulcerations are of three kinds: small gummous multiple nodules or nodular syphilides; diffuse gummous infiltration; and gummata proper, usually isolated.

Small gummous nodules (nodular syphilide, Lewin) vary in size from that of small bird-shot to that of peas, and are usually grouped in well-defined determinate figures in the body of the mucous membrane, and often so contiguous as to appear confluent. Gummata proper, present as firm hemispherical nodules or tumors, from the size of peas to that of cherries or almonds, and

sometimes much larger, in the connective tissue beneath the mucous membrane; usually uniform in outline, sometimes lobulated; undiscolored or reddish at the base, yellowish at the summit. Gummous infiltrations present as more or less longitudinal or more diffuse submucous thickenings corrugating the surface of the mucous membranes. All these products may undergo absorption.

When not absorbed, gummous nodules undergo purulent liquefaction. At this time they become softer, and more yellowish at the summit, the mucous membrane at the base becoming more inflamed and thickened, the whole mass looking not unlike a furuncle. The summit becomes perforated, and gives exit to thickened, yellow pus, with granular admixture of débris at first. The orifice rapidly enlarges by ulceration until it becomes fully as large in circumference as the nodule was, or larger, and readily coalesces with ulcerations from contiguous nodules. The ulceration extends in depth until it occupies the entire volume of the nodules, and may then penetrate all the tissues beneath, even to the perichondrium and cartilage.

The ulceration of the nodulous syphilide, as studied in a series of cases by Lewin, is said to take place more from periphery to centre than the reverse, being shallow at first, and then gradually deepening. The ulcer is round, depressed, and sharply bordered. Its bed is covered with a secretion which, from previous fatty degeneration, or purulent metamorphosis, is either thickish, or nearly lardaceous, or composed of purulent detritus.

The more longitudinal and the diffuser gummous infiltrations undergo liquefactive ulceration much more slowly; but the subsequent ulceration, when unchecked, extends much more rapidly, and becomes more readily serpiginous and phagedenic; so that, coalescing with similar conditions in the vicinity, large surfaces in continuity become involved in its ravages. As it extends in superficies it penetrates slowly in depth until it also involves the deeper structures close to the perichondrium, and sometimes to the cartilage. Ulceration varies in rapidity, extent and penetration according to the succulence or resistance of the tissues contiguous. The ulceration from diffuse gummous infiltration is preceded, according to Lewin, by extensive fatty degeneration of its surface, which gives it an almost grayish-white tinge. This is soon followed by actual defects which, at first shallow, increase in depth, and gradually penetrate to the perichondrium and the cartilage. These ulcers are characterized, like those from the nodules, by sharp definite circumscription, and by their being surrounded with an inflammatory swollen zone. They appear often as though a piece of swollen tissue had been cut out. The edges are often beset with slight crenations, which give them a gnawed appearance, but are never undermined; and their bottom is covered with a yellowish-white adherent mass, composed of pus, fatty detritus, and shreds of tissue. Gummata proper sometimes remain unchanged for prolonged periods. When they undergo degenerative metamorphosis there is formed, according to Lewin, only the characteristic viscid fluid, suppuration being exceptional. Ulceration takes place, however, in some instances, and penetrates deeply into the tissues beneath, as in the other two forms. Under unfavorable hygienic conditions of system, or of surroundings, the phagedènic ravages may become uncontrollable. They have been known to attack an artificial opening made to prevent suffocation by a gumma (Holden, *New York Medical Journal*, January 29, 1887).

Perichondritis and chondritis being set up after either form, the ulceration may penetrate the cartilage to the tissues external, forming a perichondrial abscess, which ruptures externally by a more or less circuitous route, whence the fragments of dead tissues are discharged.

Taken in point of frequency the cartilaginous structures seem to be vulnerable in the order following: epiglottis, posterior vocal processes, arytenoids, supra-arytenoids, cricoid, cuneiform and thyroid. Coming to the softer parts, the vocal bands are attacked next in frequency to the epiglottis, the left band far more frequently than the right; the interior supraglottic walls of the larynx, the aryepiglottic folds, the interarytenoid fold, the posterior wall, the ventricular bands, the snbglottic walls of the larynx, the exterior of the soft parts in the pyriform sinus. When the cartilages are attacked, whether primitively or consecutively, the chain of morbid phenomena is perichondritis, chondritis, calcification, caries, necrosis, and elimination of sequestra in crumbled masses and in fragments. The elimination of dead cartilages may consume months, and even years. It usually takes place by the interior route, occasionally by the exterior. In both instances abscess and fistula are formed, and elimination of large fragments by the interior route sometimes produces suffocative paroxysms, and occasionally actual suffocation.

The epiglottis, as repeatedly noted, is especially vulnerable to the syphilitic process, and every variety of lesion possible may ensue in any extent, from insignificant erosion to complete destruction, the character of the lesion depending upon that of the structure destroyed. It is this, as pointed out by Seiler, which gives such an irregular conformation to the epiglottis when its glands have been destroyed.

Exulceration of the entire mucous membrane of the edge reveals the exposed cartilaginous structure as a yellowish-white stripe imbedded between two thickened masses of spongy-looking tissue. Ulceration of the cartilage often commences at the anterior surface in the form of a round ulcer with thickened excavated edges Destructive ulceration usually progresses from the side and from the

edge. When the valve is only partially destroyed its remains may present two or more irregular fragments separated by fissures of varying depth, or a single fragment of any breadth, from a small stripe to nearly the entire bulk.

When totally destroyed the orifice of the larynx is separated from the post-lingual sulcus by a more or less irregular ridge of ulcerated tissue, which, after cicatrization, presents as a pale, deformed stump. This, however, does not, as a rule, prevent glutition, and in some instances does not even interfere with it; the occlusion of the larynx being effected by the base of the tongue, on the one hand, and by close approximation of the ventricular bands and sphincter-like approximation of the aryepiglottic folds, on the other.

The other cartilages, when the subject of destructive progressive ulceration, are macerated out of their investments, as it were. The ulcerative process extends into the cartilage, surrounding it, if a small one, or circumscribing a portion of it, if it be a large one. The cartilage then perishes by necrosis, is laid bare and becomes detached from its connections, in some instances remaining entangled in a sort of pocket scooped out of the soft tissues. The necrosed cartilage finally breaks through to the interior and is usually discharged by expectoration. If it be situated below the glottis, paroxysms of suffocation may ensue, or even actual apnœa, as from any other foreign body. Exfoliations of the cricoid cartilage are the most frequent source of these untoward results, which, however, sometimes ensue from exfoliations of the thyroid.

The ulcerative process sometimes penetrates blood-vessels and hæmorrhage follows. Such hæmorrhage has been known to terminate fatally (Türck, *Op. cit.*, p. 413, illustrated).

The vocal bands frequently sustain permanent lesion varying from minute losses of substance to entire destruction. Transversal dentated erosion of the border is not uncommon, and detachment from the posterior vocal processes not infrequent. Sometimes irregular papillary proliferations take place, forming mobile, projecting, pyramidal, or irregular dentritic vegetations, which project like soft, mobile stalactites into the interior, and which are large enough, in exceptional instances, to demand operative interference. Similar conditions and productions may prevail with the ventricular bands. Superficial ulcerations may heal with moderate cicatrization, which eventually becomes hardly noticeable. In deep and extensive ulcerations, when cicatrization occurs, a peculiar lustrous, whitish, stellate, contractile cicatrix is formed, similar to the syphilitic cicatrix in other mucous membranes. Instead of cicatrization, adhesions often take place between ulcerated surfaces, and thus a variety of injurious morbid conditions occur. The vocal bands may become united by a broad fibrinous band stretching between them, or by a similar obturator formed of their thickened and distended mucous membrane. The membranous web thus formed between the vocal bands usually unites them for a variable distance, commencing at the commissure; the posterior border of the structure being crescentic in ouline. Exceptionally the cords may become involved their entire length, with an orifice in the central portion of the web (Navratil).

This membranous union has been known to take place in six days (Rossbach: Langenbeck *Archives*, vol. xiv). In a case watched by Sommerbrodt (*Berlin. klin. Woch.*, April 1, 1878), the anterior third united in fourteen days, and the union of the bands was complete in six weeks. In other cases the vocal bands become united without any membrane intervention.

Other adhesions sometimes take place which may seriously impair glutition, phonation, and even respiration. These comprise depression of the epiglottis to one side or the other, or to an aryepiglottic fold, and preventing proper closure of the valve or complete elevation; adhesion of the epiglottis to either lateral pharyngeal wall; adhesion of ventricular to vocal band, sometimes preventing closure of the glottis, and often producing a shrill, weak, piping voice; adhesions anteriorly of the two vocal bands or of the two ventricular bands; adhesions of the inner surfaces of the mucous membrane of the arytenoid cartilages, so as to fix the vocal bands immovably in the median position. Other results of syphilitic laryngitis are hypertrophies, diffuse and discrete, of mucous membrane, connective tissues, or muscular substance, and consequent stricture, varying in extent, locality, and interference with function; myopathic paralysis; muscular atrophy and morbid growths.

Perichondritis or chondritis, whether following ulcerative destruction of the soft tissues or preceding it, usually excites considerable fibrinous infiltration into the adjacent submucous connective tissue, producing a chronic fibrinous œdema. When extensive, this produces suffocative symptoms, and may threaten asphyxia. Sometimes the submucous infiltrations become organized and transformed into dense fibrous tissues incapable of undergoing absorption, and thus they produce deformity, occlusion of the larynx, and stricture. The strictures are often incapable of yielding to systematic dilatation, even when instituted early; and hence tracheotomy is usually necessary to provide artificial means for respiration below the seat of obstruction. After tracheotomy, the process may progress to complete obliteration.

These strictures are of the most varying form and calibre, some of them distorting the configuration of the interior of the larynx almost out of recognition. Fortunately, most of them occur in the supra-glottic region, where they are far more accessible to effective treatment.

Lesions of either soft tissues or cartilage in the neighborhood of the important crico-arytenoid articulations excite non-specific inflammation of the joint which may produce true or false ankylosis. Syphilis is probably the most frequent cause of this lesion. When the specific process invades the joint, the ligaments and perichondrium suffer, and true ankylosis, or luxation, or disarticulation, and even discharge of the arytenoid and supra-arytenoid cartilages, may ensue.

In the latter stages of unrestrained lesion, the cachexia is much the same as in analogous advanced stages of tuberculosis.

Myopathic paralyses of the muscles of the larynx may occur in the later periods of secondary syphilis, and at any period of tertiary syphilis. They are most frequently unilateral, the left side being affected far oftener than the right. The onset is often sudden or acute, following severe or sudden exposure to cold and dampness. The paralysis often affects the dilator muscles, and bilateral paralysis of the dilators is not infrequent. Paralyses of the arytenoid muscle and of the entire constrictor group are the most frequent varieties. These paralyses differ in their pathological origin from other examples of paralysis in syphilis, which are due, respectively, to compression of the tract of the nerve-supply by diseased tracheo-bronchial glands or other structure, and to neural or cerebral lesions which present in the latter stages of the confirmed dyscrasia.

Tertiary lesions of the trachea are first observed so very frequently in the stage of ulceration, that it had been assumed that tertiary syphilis of the trachea always produces ulceration (Vierling). Schech and others have reported instances of resorption of gummata under specific medication. The clinical tendency, however, is to ulceration. Tracheal ulcerative lesions are sometimes unassociated with lesions elsewhere in the aërial tract. Much more commonly they are found associated with similar lesions in the larynx, in the bronchi, or in both.

Pharyngeal syphilis exists in thirty out of forty-six, collated by Vierling, and pulmonary syphilis in six out of fifty (Schech). They are often found associated with additional syphilitic lesions at a distance. In a large proportion of instances a primitive bronchus is affected, the left one the more frequently; in some, both primitive bronchi; in a few, the smaller ramifications (Vierling); and, exceptionally, even the minutest (Lancereaux). In some instances syphilitic lesion is confined to the bronchia (five cases, by Vierling). The upper portion of the trachea suffers most when the larynx is involved; the lower portion, when the disease is isolated or associated with syphilis of the bronchi. In some instances the middle portion alone suffers (Vigla and Charnal, Berger, Mackenzie, of Baltimore, Semon); exceptionally, the two extremities, with complete conservation of the middle portion (Tessier, cited by Rey).

When not occurring in direct continuity with similar lesion in the larynx, the most frequent seat of ulceration is in the anterior surface of the lower portion of the trachea just above the bifurcation whence it extends upward, or in patches continuously sometimes as far as the cricoid cartilage; sometimes almost completely around the interior in periphery, occasionally completely around. Multiple perichondritis is easily set up and results in abscess, denudation of cartilage, calcification, caries, and necrosis. Portions of dead cartilage are sometimes coughed up in fragments. Sometimes semi-detatched portions project into the interior and interfere seriously with respiration and with expectoration. The ulceration usually begins in a number of small ulcers which extend in depth and in periphery, baring the perichondrium, and causing portions of the cartilaginous rings, or entire rings, to undergo denudation, necrosis, and exfoliation. Coalescence with similar ulcerating surfaces, or phagedenic extension sometimes produces very extensive ravages which may involve nearly the entire circumference of the trachea, and nearly, occasionally quiet, its entire length. Flaps of detached membrane sometimes fall over, producing valvular impediments to inspiration, or to expiration, according to the position of the attachments. The cicatrization of annular ulcerations produces stricture often so low down as to be beyond relief even from tracheotomy, the parts not being well adapted to respond to artificial dilatation. The strictures are irregularly ovoidal in shape, sometimes funnel-shaped, and of varying thickness from a few lines to that of several rings.

These cicatrices may reduce the calibre of the trachea so considerably as to prevent respiration. Occlusion to the calibre of a crowquill is not uncommon, and still greater occlusion has been noted in some instances. Annular stricture at the bifurcation may become so great as barely to admit the passage of a delicate probe. (Obtulowicz: *Cent. f. Chir.*, 1879, No. 7).

Irregular annular dilatation of the trachea is often produced by the pressure of the air current above the stricture and sometimes below it. Even dilatation of the bronchi has been noticed.

Projecting ridges of cicatricial tissue below the point of stricture are sometimes so located as to occlude the inferior orifice of a tracheal canula more or less, a point not sufficiently recognized, for it might be practicable in some instances to push a canula into a position which would allow its inferior extremity to pass the obstruction.

Stricture of the bronchi is rare. It affects the left bronchus more frequently (Verneiuel *et al.*); sometimes the right one (Wilks, *et al.*); occasionally both (Virchow, *et al.*). The connective tissue around the strictured portions usually un-

dergoes permanent sclerotic proliferation. Sometimes there is great peritracheal sclerosis, sometimes none. The peritracheal glands may undergo great enlargement. All these conditions superadded to the internal stricture, may greatly increase stenosis.

Ulceration sometimes penetrates through the trachea producing abscess opening into the œsophagus or the mediastinum, the aorta (Rokitansky: *Path. An.*, Bd. III, p. 22; Wilks: *Trans. Path. Soc.*, London, 1865, p. 52), the pulmonary artery (Kelly: Id., 1872, p. 45), or the vena cava (Turner: Id., xxxvii. p. 117). In at least two instances of ulceration of the left bronchus the left branch of the pulmonary artery has been found perforated. (Vierling).

Inflammation around the trachea or bronchi sometimes produces adhesions to the œsophagus or to other tissues, which depresses the trachea and larynx and impairs their upward movements in glutition. Sometimes it produces peritracheal or tracheo-bronchial abscess. Abscess of bronchus, sometimes deeply seated, has occurred after tracheotomy, apparently as a result of too assiduous swabbing of the canula.

The lesions of hereditary syphilis are almost identical with those of the gummous infiltrations of tertiary syphilis. They sometimes appear very early. Ulcerations have been noticed in infants at 2 months of age (Parrot: *Prog. Méd.*, 1878, p. 653). Stricture from perichondritis has been noticed at the same age (Fränkel: *Wien. Med. Woch.*, 1868, No. 18; Parrot: loc. cit.).

Symptomatology.—The laryngeal symptoms of secondary syphilis are not characteristic. They are chiefly comprised in dissonant alterations of the voice, either hoarseness, dysphonia, and in some cases occasional or temporary aphonia. The hoarseness is supposed to have some peculiarity which has been termed *raucedo syphilitica*, but this is not the case. In some instances it is simply due to catarrhal laryngitis, in others to paresis of one or more of the constrictor muscles, or possibly to paralysis of the tensors. Respiration is not affected except in those instances in which œdema occurs in such a position as to occlude the passage of air, when it will be announced by dyspnœa and stridulous respiration, the characteristic symptoms of that condition. Titillation and cough are not as frequent as in inflammations of other origin. In many instances there is no tickling and no cough, no pain and no dysphagia.

Dysphagia is not present unless there be œdema of the parts utilized or pressed upon in glutition.

In tertiary syphilis of the larynx the symptoms are usually those of impairment of phonation, followed in severe cases by dyspnœa and stridor also, chiefly inspiratory. The stridor is worse at night from inaction of the auxiliary muscles of respiration. Should the mechanical impediment to respiration increase, inspiratory depression of the soft parts below the sternum takes place. If relief is not obtained, artificially or otherwise, asphyxia supervenes from imperfect aëration of the blood. Suffocation may occur suddenly from impaction of detached cartilage; but it is more frequently slow enough in its approaches to allow time for tracheotomy.

Titillation and cough are more frequent in the earlier stages than in secondary syphilis; but they diminish after ulceration has taken place, except in so far as they are produced from time to time by morbid products detained upon diseased and adjacent surfaces. Pain is infrequent before the period of ulceration; after that it may be severe, and radiate into the ears as in other ulcerative diseases. In the early stage there is no expectoration. The earliest expectoration is of collateral catarrhal products only. As ulceration progresses it becomes muco-purulent, and then purulent and sanguineo-purulent, and mixed with detritus according to the stage and location of the lesion.

If gangrene takes place the odor becomes fetid, and the expectoration contains fragments of dead soft and cartilaginous tissue, as may be.

Dysphagia ensues when the disease is in a locality to interfere with glutition, and odymphagia when ulcerations have occurred in the same localities.

In tertiary syphilis of the trachea the symptoms affect mainly the function of respiration, the voice often remaining normal even when breathing is seriously embarrassed.

Pain along the course of the trachea, if constant, is indicative of lesion at that particular point. Cases may run their entire course without any special symptom, even in the presence of stricture of the trachea, and of the bronchi, and of extensive disorganization as revealed at the post-mortem examination.

In hereditary syphilis, the symptoms are sometimes congenital and may remain practically continuous for years. Respiration and phonation are both affected. The cry of the infant sometimes possesses a shrill metallic resonance which has been compared to that of a tin trumpet. Cough is more frequent in the child than in the adult. Glutition is often difficult and sometimes painful. Expectoration occurs in the suppurative stages when the child is old enough to expel the products, which by infants are swallowed or retained in the air passages. Laryngismus is a symptom of frequent occurrence in young children.

Etiology.—The probable condition attracting the manifestation of constitutional syphilis to the larynx is superficial catarrhal laryngitis from hereditary or acquired proclivity, or from exposure, or from abuse of tobacco, alcohol, or other indulgence, or from misuse of the voice. Such exposures cause more males to be affected than females, as there is no assignable sexual reason

for preponderance. Tracheal lesions, on the other hand, have been reported more frequently in females, probably because the laryngeal lesion is attended to more promptly by the male. Syphilitic disease often extends by continuity from the oro-pharyngeal region to the larynx, principally along the pharyngo-epiglottic fold to the epiglottis, and thence along the aryteno-epiglottic fold, and from the two structures to the interior. Hereditary syphilis has been observed in intra-uterine life (Monti: *Med. Times*, Phila., April 28, 1877, p. 336). Hereditary syphilis of the intensest character has been occasionally observed at a very early age, as in the case of an infant whose symptoms began with coryza in the tenth week of life, and terminated in death by suffocation from stenosis nineteen days later. Post-mortem, with examination, revealed in addition to syphilitic lesions in the liver, destructive perichondritis of cricoid and left arytenoid cartilage, and fatty degeneration of arytenoid and both posterior crico-arytenoid muscles and the left superior nerve (Fränkel: *Wien. med. Woch.*, 1868, Nos. 69, 70, cited by Ziemssen and by Mackenzie). Children less than a year of age often show laryngeal lesions of hereditary syphilis, and ulcerative lesions have been seen at two months of age (Parrot: *Prog. Méd.*, 1878, p. 635). Many cases occur in children but a few years of age, and sometimes the manifestations are deferred to the period of puberty or even later. Indeed, in opposition to the received opinion of syphilographers, I have reason to believe that in a few instances I have seen its manifestations delayed as late as the third and even the fourth decennium. True, in such instances as the latter it is quite possible that infection may have been acquired in some method unknown, without having been followed by any secondary manifestations, or that early hereditary manifestations may have escaped recognition. The secondary manifestations occur most frequently in adolescents and young adults. They appear most frequently at periods varying from a few weeks to a few months after infection, sometimes as late as the fourteenth or seventeenth month (Morgan). Tertiary lesions are most frequent at rather maturer ages, and occur occasionally in quite advanced life. They have been reported as early as the sixteenth month (Türck, op. cit.), and as late in their first appearance as the thirtieth (Türck), and even the fiftieth year (Mackenzie). Tracheo-bronchial tertiary lesions have been reported as appearing as early as the ninth month after infection, but these lesions are usually coincident with the laryngeal lesions when not immediately consecutive to them.

Most of the instances of tracheal syphilis occur in individuals whose employments expose them to irritation from dusts of various kinds (Vierling: *Deutsches Arch. f. klin Med.*, 1878, Bd. 21).

(*To be concluded.*)

PUBLIC HEALTH.

DISINFECTION AND DISINFECTANTS.

Conclusions of the Committee on Disinfectants of the American Public Health Association.

The most useful agents for the destruction of spore-containing infectious material are:

1. *Fire.* Complete destruction by burning.
2. *Steam under pressure.* 105° C. (221° Fahr.) for ten minutes.
3. *Boiling in water* for half an hour.
4. *Chloride of lime.*[1] A 4 per cent. solution.
5. *Mercuric chloride.* A solution of 1:500.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms not containing spores, the committee recommends:

1. *Fire.* Complete destruction by burning.
2. *Boiling in water* for ten minutes.
3. *Dry Heat.* 110° C. (230° Fahr). for two hours.
4. *Chloride of lime.* A 2 per cent. solution.
5. *Solution of chlorinated soda.*[2] A 10 per cent. solution.
6. *Mercuric Chloride.* A solution of 1:2,000.
7. *Carbolic acid.* A 5 per cent. solution.
8. *Sulphate of copper.* A 5 per cent. solution.
9. *Chloride of zinc.* A 10 per cent. solution.
10. *Sulphur dioxide.*[3] Exposure for twelve hours to an atmosphere containing at least 4 volumes per cent. of this gas in presence of moisture.

The committee would make the following recommendations with reference to the practical application of these agents for disinfecting purposes:

FOR EXCRETA.

(*a*) In the sick-room:

1. Chloride of lime in solution, 4 per cent.

In the absence of spores:

2. Carbolic acid in solution, 5 per cent.
3. Sulphate of copper in solution, 5 per cent.

(*b*) In privy vaults:

1. Mercuric chloride in solution, 1:500.[4]
2. Carbolic acid in solution, 5 per cent.

(*c*) For the disinfection and deodorization of the surfaces of masses of organic material in privy vaults, etc.:

Chloride of lime in powder.

FOR CLOTHING, BEDDING, ETC.

(*a*) Soiled underclothing, bed-linen, etc.:

1. Destruction by fire, if of little value.
2. Boiling for at least half an hour.

[1] Should contain at least 25 per cent. of available chlorine.
[2] Should contain at least 3 per cent. of available chlorine.
[3] This will require the combustion of between 3 and 4 pounds of sulphur for every 1,000 cubic feet of air space.
[4] The addition of an equal quantity of potassium permanganate as a deodorant, and to give color to the solution, is to be recommended.

3. Immersion in a solution of mercuric chloride of the strength of 1:2,000 for four hours.

4. Immersion in a 2 per cent. solution of carbolic acid for four hours.

(*b*) Outer garments of wool or silk, and similar articles, which would be injured by immersion in boiling water or in a disinfecting solution:

1. Exposure in a suitable apparatus to a current of steam for ten minutes.

2. Exposure to dry heat at a temperature of 110° C. (230° Fahr.) for two hours.

(*c*) Mattresses and blankets soiled by the discharges of the sick:

1. Destruction by fire.

2. Exposure to super-heated steam, 105° C. (221° Fahr.) for ten minutes.

(Mattresses to have the cover removed or freely opened.)

3. Immersion in boiling water for half an hour.

FURNITURE AND ARTICLES OF WOOD, LEATHER, AND PORCELAIN.

Washing, several times repeated, with:

1. Solution of carbolic acid, 2 per cent.

FOR THE PERSON.

The hands and general surface of the body of attendants of the sick, and of convalescents, should be washed with:

1. Solution of chlorinated soda diluted with nine parts of water, 1:10.

2. Carbolic acid, 2 per cent. solution.

3. Mercuric chloride, 1:1,000.

FOR THE DEAD.

Envelop the body in a sheet thoroughly saturated with:

1. Chloride of lime in solution, 4 per cent.

2. Mercuric chloride in solution, 1:500.

3. Carbolic acid in solution, 5 per cent.

FOR THE SICK-ROOM AND HOSPITAL WARDS.

(*a*) While occupied, wash all surfaces with:

1. Mercuric chloride in solution, 1:1,000.

2. Carbolic acid in solution, 2 per cent.

(*b*) When vacated, fumigate with sulphur dioxide for twelve hours, burning at least three pounds of sulphur for every 1,000 cubic feet of air-space in the room; then wash all surfaces with one of the above-mentioned disinfecting solutions, and afterward with soap and hot water; finally throw open doors and windows, and ventilate freely.

FOR MERCHANDISE AND THE MAILS.

The disinfection of merchandise and the mails will only be required under exceptional circumstances; free aeration will usually be sufficient. If disinfection seems necessary, fumigation with sulphur dioxide will be the only practicable method of accomplishing it without injury.

RAGS.

(*a*) Rags which have been used for wiping away infectious discharges should at once be burned:

(*b*) Rags collected for the paper-makers during the prevalence of an epidemic should be disinfected before they are compressed in bales, by:

1. Exposure to super-heated steam of 105° C. (221° Fahr.) for ten minutes.

2. Immersion in boiling water for half an hour.

SHIPS.

(*a*) Infected ships at sea should be washed in every accessible place, and especially in the localities occupied by the sick, with:

1. Solution of mercuric chloride, 1:1,000.

2. Solution of carbolic acid, 2 per cent.

The bilge should be disinfected by the liberal use of a strong solution of mercuric chloride.

(*b*) Upon arrival at a quarantine station, an infected ship should at once be fumigated with sulphurous acid gas, using three pounds of sulphur for every 1,000 cubic feet of air space; the cargo should then be discharged on lighters; a liberal supply of the concentrated solution of mercuric chloride (4 oz. to the gallon) should be thrown into the bilge, and at the end of twenty-four hours the bilge-water should be pumped out and replaced with pure sea-water: this should be repeated. A second fumigation, after the removal of the cargo, is recommended; all accessible surfaces should be washed with one of the disinfecting solutions heretofore recommended, and subsequently with soap and hot water.

FOR RAILWAY CARS.

The directions given for the disinfection of dwellings, hospital wards, and ships, apply as well to infected railway cars. The treatment of excreta with a disinfectant, before they are scattered along the tracks, seems desirable at all times in view of the fact that they may contain infectious germs. During the prevalence of an epidemic of cholera this is imperative. For this purpose the standard solution of chloride of lime is recommended.

At the annual meeting of the Sanitary Council of the Mississippi Valley, held in New Orleans, La., March 10, 11, 1885, the following resolution was adopted:

Resolved, That the secretary request from the chairman of the Committee on Disinfectants, appointed at the last meeting of the American Public Health Association, a plain, practical paper on "Disinfection and Disinfectants," for popular use and distribution, to be furnished to the chairman or the special committee of this council on General Sanitation.

In compliance with this request a Preliminary Report was prepared, which has been quite widely circulated. This report having been made before the experimental researches of the committee were completed, and being a "preliminary report," was only intended to serve a temporary purpose; but it has been thought best to revise it, and to introduce it into this our final report,

so that it may be available for distribution in a separate form if sanitary officials find it suitable for popular use.

DISINFECTION AND DISINFECTANTS.

The object of disinfection is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them. This is accomplished by the use of disinfectants.

There can be no partial disinfection of such material: either its infecting power is destroyed, or it is not. In the latter case there is a failure to disinfect. Nor can there be any disinfection in the absence of infectious material.

It has been proved for several kinds of infectious material, that its specific infecting power is due to the presence of living microörganisms, known in a general way as "disease germs;" and practical sanitation is now based upon the belief that the infecting agents in all kinds of infectious material are of this nature. Disinfection, therefore, consists essentially in the destruction of disease germs.

Popularly, the term disinfection is used in a much broader sense. Any chemical agent which destroys or masks bad odors, or which arrests putrefactive decomposition, is spoken of as a disinfectant. And in the absence of any infectious disease it is common to speak of disinfecting a foul cesspool, or bad smelling stable, or privy vault.

This popular use of the term has led to much misapprehension, and the agents which have been found to destroy bad odors—deodorizers—or to arrest putrefactive decomposition—antiseptics—have been confidently recommended and extensively used for the destruction of disease germs in the excreta of patients with cholera, typhoid fever, etc.

The injurious consequences which are likely to result from such misapprehension and misuse of the word disinfectant, will be appreciated when it is known that recent researches have demonstrated that many of the agents which have been found useful as deodorizers, or as antiseptics, are entirely without value, for the destruction of disease germs.

This is true, for example, as regards the sulphate of iron or copperas, a salt which has been extensively used with the idea that it is a valuable disinfectant. As a matter of fact, sulphate of iron in saturated solution does not destroy the vitality of disease germs, or the infecting power of material containing them. This salt is, nevertheless, a very valuable antiseptic, and its low price makes it one of the most available agents for the arrest of putrefactive decomposition.

Antiseptic agents, however, exercise a restraining influence upon the development of disease germs, and their use during epidemics is to be recommended when masses of organic material in the vicinity of human habitations cannot be completely destroyed, or removed, or disinfected.

While an antiseptic agent is not necessarily a disinfectant, all disinfectants are antiseptics; for putrefactive decomposition is due to the development of "germs" of the same class as that to which disease germs belong, and the agents which destroy the latter also destroy the bacteria of putrefaction when brought in contact with them in sufficient quantity, or restrain their development when present in smaller amounts. A large number of the proprietary "disinfectants," so-called, which are in the market, are simply deodorizers or antiseptics, of greater or less value, and are entirely untrustworthy for disinfecting purposes.

Antiseptics are to be used at all times when it is impracticable to remove filth from the vicinity of human habitations, but they are a poor substitute for cleanliness. During the prevalence of epidemic diseases, such as yellow fever, typhoid fever, and cholera, it is better to use in privy-vaults, cess-pools, etc., those antiseptics which are also disinfectants, *i.e.*, germicides; and when the contents of such receptacles are known to be infected, this becomes imperative.

Still more important is the destruction at our seaport quarantine stations of infectious material which has its origin outside of the boundaries of the United States, and the destruction within our boundaries, of infectious material given off from the persons of those attacked with any infectious disease, whether imported or of indigenous origin.

In the sick-room we have disease germs at an advantage, for we know where to find them as well as how to kill them. Having this knowledge, not to apply it would be criminal negligence, for our efforts to restrict the extension of infectious diseases must depend largely upon the proper use of disinfectants in the sick-room.

GENERAL DIRECTIONS.

Disinfection of Excreta, etc. The infectious character of the dejections of patients suffering from cholera and from typhoid fever is well established; and this is true of mild cases and of the earliest stages of these diseases as well as of severe and fatal cases. It is probable that epidemic dysentery, tuberculosis, and perhaps diphtheria, yellow fever, scarlet fever, and typhus fever, may also be transmitted by means of the alvine discharges of the sick. It is therefore of the first importance that these should be disinfected. In cholera, diphtheria, yellow fever, and scarlet fever, all vomited material should also be looked upon as infectious. And in tuberculosis, diphtheria, scarlet fever, and infectious pneumonia, the sputa of the sick should be disinfected or destroyed by fire. It seems advisable also to treat the urine of patients sick with an infectious

disease with one of the disinfecting solutions below recommended.

Chloride of lime, or bleaching powder, is perhaps entitled to the first place for disinfecting excreta on account of the rapidity of its action. The following standard solution is recommended:

Dissolve chloride of lime of the best quality[5] *in pure water, in the proportion of six ounces to the gallon.*

Use one quart of this solution for the disinfection of each discharge in cholera, typhoid fever, etc.[6] Mix well, and leave in the vessel for at least one hour before throwing into privy-vault or water closet. The same directions apply for the disinfection of vomited matters. Infected sputum should be discharged directly into a cup half-full of the solution. A 5 per cent. solution of carbolic acid may be used instead of the chloride of lime solution, the time of exposure to the action of the disinfectant being four hours.

Disinfection of the person. The surface of the body of a sick person, or of his attendants, when soiled with infectious discharges, should be at once cleansed with a suitable disinfecting agent. For this purpose solution of chlorinated soda (liquor sodæ chlorinatæ) diluted with nine parts of water, or the standard solution of chloride of lime diluted with three parts of water, may be used. A 2 per cent solution of carbolic acid is also suitable for this purpose, and under proper medical supervision the use of a solution of corrosive sublimate—1:1,000—is to be recommended.

In diseases like small-pox and scarlet fever, in which the infectious agent is given off from the entire surface of the body, occasional ablutions with the above mentioned solution of chlorinated soda are recommended.

In all infectious diseases the body of the dead should be enveloped in a sheet saturated with the standard solution of chloride of lime, or with a 5 per cent. solution of carbolic acid, or a 1:500 solution of corrosive sublimate.

Disinfection of clothing. Boiling for half an hour will destroy the vitality of all known disease germs, and there is no better way of disinfecting clothing or bedding which can be washed than to put it through the ordinary operations of the laundry. No delay should occur, however, between the time of removing soiled clothing from the person or the bed of the sick and its immersion in boiling water, or in one of the following solutions until this can be done:

Corrosive sublimate one drachm to the gallon of water (about 1:1,000), or,

Carbolic acid, pure, one ounce to the gallon of water (1:128).

The articles to be disinfected must be thoroughly soaked with the disinfecting solution and left in it for at least two hours, after which they may be wrung out and sent to the wash.

N. B. Solutions of corrosive sublimate should not be placed in metal receptacles, for the salt is decomposed and the mercury precipitated by contact with copper, lead, or tin. A wooden tub or earthen crock is a suitable receptacle for such solutions.

Clothing or bedding which cannot be washed should be disinfected by steam in a properly constructed disinfection chamber. In the absence of a suitable steam disinfecting apparatus, infected clothing and bedding should be burned.

Disinfection of the sick-room. In the sick-room no disinfectant can take the place of free ventilation and cleanliness. It is an axiom in sanitary science that it is impracticable to disinfect an occupied apartment for the reason that disease germs are not destroyed by the presence in the atmosphere of any known disinfectant in respirable quantity. Bad odors may be neutralized, but this does not constitute disinfection in the sense in which the term is here used. These bad odors are, for the most part, an indication of want of cleanliness, or of proper ventilation; and it is better to turn contaminated air out of the window or up the chimney than to attempt to purify it by the use of volatile chemical agents, such as carbolic acid, chlorine, etc., which are all more or less offensive to the sick, and are useless so far as disinfection—properly so called—is concerned.

When an apartment which has been occupied by a sick person with an infectious disease has been vacated, it should be disinfected. The object of disinfection in the sick-room is mainly the destruction of infectious material attached to surfaces, or deposited as dust upon window ledges, in crevices, etc. If the room has been properly cleansed and ventilated while still occupied by the sick person, and especially if it was stripped of carpets and unnecessary furniture at the outset of his attack, the difficulties of disinfection will be greatly reduced,

All surfaces should be thoroughly washed with the standard solution of chloride of lime diluted with three parts of water, or with 1:1,000 solution of corrosive sublimate. The walls and ceiling, if plastered, should be subsequently treated with a lime-wash. Especial care must be taken to wash away all dust from window ledges and other places where it may have settled, and thoroughly to cleanse crevices and out-of-the-way places. After this application of the disinfection solution, and an interval of twenty-four hours or longer for free ventilation, the floors and wood-work should be well scrubbed with soap and hot water, and this should be followed by a second more prolonged exposure to fresh air, admitted through open doors and windows.

[5] Good chloride of lime should contain at least 25 per cent. of available chlorine (page 92). It may be purchased by the quantity at 3½ cents per pound. The cost of the standard solution recommended is, therefore, but little more than 1 cent a gallon. A clear solution may be obtained by filtration or by decantation, but the insoluble sediment does no harm, and this is an unnecessary refinement.

[6] For a very copious discharge, use a large quantity.

As an additional precaution, fumigation with sulphurous acid gas is to be recommended, especially for rooms which have been occupied by patients with small-pox, scarlet fever, diphtheria, typhus fever and yellow fever. But fumigation with sulphurous acid gas alone, as commonly practiced, cannot be relied upon for disinfection of the sick-room and its contents, including bedding, furniture, infected clothing, etc., as is popularly believed.

When fumigation is practiced, it should precede the general washing with a disinfecting solution heretofore recommended. To ensure any results of value, it will be necessary to close the apartment to be disinfected as completely as possible by stopping all apertures through which the gas might escape, and to burn not less than three pounds of sulphur for each thousand cubic feet of air space in the room. To secure complete combustion of the sulphur, it should be placed in powder or in small fragments, in a shallow iron pan, which should be set on a couple of bricks in a tub partly filled with water, to guard against fire. The sulphur should be thoroughly moistened with alcohol before igniting it.

Disinfection of privy vaults, cesspools, etc. When the excreta (not previously disinfected) of patients with cholera or typhoid fever have been thrown into a privy vault, this is infected, and disinfection should be resorted to as soon as the fact is discovered, or whenever there is reasonable suspicion that such is the case. It will be advisable to take the same precautions with reference to privy vaults into which the excreta of yellow fever patients have been thrown, although we do not definitely know that this is infectious material.

For this purpose the standard solution of chloride of lime may be used in quantity proportioned to the amount of material to be disinfected, but where this is considerable it will scarcely be practicable to sterilize the whole mass. The liberal and repeated use of this solution, or of a 5 per cent. solution of carbolic acid will, however, disinfect the surface of the mass, and is especially to be recommended during the epidemic prevalence of typhoid fever or of cholera.

All exposed portions of the vault, and the wood-work above it, should be thoroughly washed down with the disinfecting solution. Instead of the disinfecting solutions recommended, chloride of lime in powder may be daily scattered over the contents of the privy vault.

Disinfection of ingesta. It is well established that cholera and typhoid fever are very frequently, and perhaps usually, transmitted through the medium of infected water or articles of food, and especially milk. Fortunately we have a simple means at hand for disinfecting such infected fluids. This consists in the application of heat. The boiling temperature maintained for half an hour kills all known disease germs. So far as the germs of cholera, yellow fever, and diphtheria are concerned, there is good reason to believe that a temperature considerably below the boiling point of water will destroy them. But in order to keep on the safe side, it is best not to trust anything short of the boiling point (212° F.) when the object is to disinfect food or drink which is open to the suspicion of containing the germs of any infectious disease.

During the prevalence of an epidemic of cholera it is well to boil all the water for drinking purposes. After boiling, the water may be filtered, if necessary to remove sediment, and then cooled with *pure* ice if desired.

FOREIGN CORRESPONDENCE.

LETTER FROM LONDON.

(FROM OUR OWN CORRESPONDENT.)

Novel Treatment of Meningitis—Chemistry for Pharmacists—A University for London—The Pasteur Treatment—Nephrorrhaphy for Movable Kidney—Ichthyol in Erysipelas.

Singular superstitions prevail in Paris, despite its claim to be the centre of modern civilization. A woman, whose child was suffering from meningitis, concluded to try an old-wives' remedy, and she accordingly allowed a pigeon to be killed on the little patient's head, in belief that the malady would be absorbed by the pigeon's flowing blood. The doctor in attendance learned, to his surprise, that the practice is by no means uncommon, and that one woman in the Halles sells on a daily average ten or twelve pigeons destined for this singular sacrifice.

From the address of Sir Henry Roscoe at the opening of the forty-seventh session of the School of Pharmacy, he mentioned that for skill and cunning in the discovery and preparation of "simples," the German pharmacist leaves his English brother really nowhere. Well might the President of this inaugural gathering ask why it is that so much more is done on the Continent than in England in the preparation of rare drugs and in the discovery of new ones, of artificial febrifuges and antipyretics, to say nothing of such interesting bodies as saccharin and other products of foreign science and skill. "It is simply," says Sir Henry, "because a more ample opportunity is given to him for the study of chemistry in its higher stages and in its application to pharmacy than has hitherto been accorded to us." It is consoling, however, to be assured that the Research Laboratory of the School of Pharmacy will do something to set this matter right.

The event of the past week has been the commencement of the winter session in the medical

schools. Up to the present the entrances of fresh students have been decidedly below the average of past years. Professor John Eric Erichsen, speaking at King's College, stated that King's College and University College had coöperated in furthering one of the noblest and greatest educational works ever propounded in London, viz.: the endeavor to establish, for the first time in the history of London, a University in and for London. A Royal Commission had been sitting for some months to consider the advisability of acceding to the petition of the two Colleges for the proposed new University. There was a great deal of misapprehension in the public mind as to the proposed Albert University. The sons and daughters of Londoners suffered much from the difficulty of obtaining a thorough university education in the metropolis, and it was now necessary for them to go to distant institutions in pursuit of such an education. But both King's College and University College possessed every requisite for that system of university education. Taking their size, wealth and endowments, and their general position as educational establishments, the governing bodies of the colleges felt that they were fully justified in petitioning that University rank might be conferred upon them. If the petition were granted, and if University rank were granted to the two Colleges, in connection especially with the medical schools of London, they would be able to start at once with a body of undergraduates more numerous than that possessed by any University in the United Kingdom. It would number something like 2,000 or, if those who would come in from other medical schools were included, the number would be considerably over 3,000. The medical profession was, the Professor said in conclusion, the Republic of Medicine in this sense—that there was no hereditary road to it, and there was no privileged class in it. Every position in it was open to all men who had the ability to aspire to and the will to seize it.

Detractors of Professor Pasteur are attaching great importance to the case of a young man who has just died of hydrophobia twenty-seven months after the completion of the Pasteur treatment. The deceased, a farmer 26 years of age, was bitten by a mad dog in the month of May, 1886, in the little finger of the right hand. On the tip of the finger there were three wounds, which were in the first place cauterized with a red-hot iron—this precaution, however, not being taken until two or three days after the accident. Soon afterwards the farmer came to Paris, presented himself at the Pasteur laboratory and underwent the usual course of treatment. He returned home and enjoyed his usual health until the summer of the present year, when he caught a slight cold and complained of pain in the bitten finger. The pain rapidly extended to the arm, the shoulder and the right side, and a day or two subsequently he became convulsive and was removed to a hospital, where he died with all the usual symptoms of rabies. The conclusion M. Pasteur's adversaries draw from this case is that the eminent Professor's system offers no guarantee against the terrible consequences that may attend the bite of a mad dog. Probably, however, M. Pasteur will have something to say respecting the case referred to which will give it another aspect.

Mr. Gould has recently, at the Middlesex Hospital, successfully performed the operation of fixing a movable kidney. Mr. Gould considers the mode of passing the suture of great importance. Instead of making a large curved needle, such as is usually employed, carry the suture at a single sweep through the organ and lumbar aponeurosis, he prefers first to pass the suture through the kidney, taking up as broad a piece of its capsule and cortex as possible, and then to pass each end of the suture through its corresponding portion of the lumbar aponeurosis. Two sutures passed in this manner are found sufficient to hold the kidney firmly, and if they are tied carefully, the chance of their cutting out through the kidney, and so not holding it so securely as desired, are reduced to a minimum. A subsidiary advantage of the buried suture is that the wound can be closed smoothly and accurately by the ordinary sutures. When the kidney is fixed by external sutures they pucker the wound and interfere with the most rapid and perfect healing. As to the material of the deep sutures, Mr. Gould considers silk, as being more durable than gut or tendon, would be preferable, were it not that it is more difficult to render absolutely aseptic than is kangaroo tendon. That, at any rate, is his experience; and the tendon has answered so well in his hands as a ligature in ovariotomy and as a suture in the radical cure of hernia, that he uses it with full confidence.

Ichthyol for erysipelas has been successful in the hands of some medical men. It is used in combination with ether, 10 parts of each in 180 parts of collodion, as a local application. An ointment composed of equal parts of ichthyol and vaseline has also been successfully employed.

DOMESTIC CORRESPONDENCE.

Monstrosities and Mental Impressions.

Dear Sir:—The article in THE JOURNAL of October 13th reminds us that for ages woman has been tortured with fears and anxieties created by those who should be her shield and strength. Hardly a woman since Satan

> "Squat like a toad close at the ear of Eve,
> Assaying by his devilish arts to reach
> The organs of her fancy,"

has gone through her pregnancy without experi-

encing an impression far more potent than catching a frog instead of a fish. If by any law her fears, and hopes, and desires could change the form of her unborn child, the race would long ago have been transformed to beasts and birds and creeping things. The "ring-streaked, speckled and spotted" results of Jacob's experiments on Laban's ewes would be nothing to the markings of mankind, and we might well question the wisdom of the All Wise, as well as the power of Him who ordained "each after his kind." But from the myriad impressions, powerful impressions, made upon expectant mothers, how many leave "mother's marks," and how many mother's marks conform to any given impression? What physician has not been consulted about such impressions, and who has not had cases corresponding with this? The husband of Mrs. ——, in a playful mood, brought from the barn a handfull of hairless young rats, and saying to his young wife, a few weeks advanced in her first pregnancy, "Here, my dear," emptied them into her extended hands. She dropped them upon the floor and shudderingly exclaimed, "My baby will look like those things." She believed in her power to impress the child. The fear tortured her through the long months of pregnancy, and when the babe was born her first question was "Does it look like a rat?" It is hardly necessary to say it did not. Or who has not had experiences like this: The child was born, and the good ladies in attendance asked "What did you see? No? Why you must have seen something." And so they strove to find the impression that caused spina bifida. Or the child is born with an anastomotic aneurism on the head, and after many questions and cross-questions about cherries and strawberries and plums the mother at last remembers that she longed for plums.

We have seen many and various "marks" and deformities, but none that conformed any more nearly to a given idea in the mother's mind than the horse's mane in Nelligan's plates on skin diseases, or Dr. Jessup's frog; and if mothers can't do better than these examples they may as well give up mental impression art.

Let us glance a moment at the logic of what might only cause a smile if it was not the source of painful anxiety in those we love. When an ovarian becomes an embryonic cell it is a new life and differentiates and proliferates other cells in harmony with its individuality. Henceforward it appropriates whatever it receives, whether from the mother's blood or breast, from cow or cook, in accordance with the laws of its own organism, and the mother has no more power through a mental impression upon her blood or milk to make its development conform to a given idea than the cow or the cook. She may, through the undue exercise of the emotions, through improper diet or disease poison the food she provides, but that is the extent of her power. When it has entered another organism it is beyond her control. She cannot by any mental impression cause a maldevelopment in her own body conforming to a given idea. Much less can she produce such a result in another, however closely related to her.

Are we pointed to wonderful experiences and asked to account for them? Experience and mysticism prove anything from the cures of homœopathic dynamizations and "Christian Scientists," to "mother's marks." But as with the nostrum vender, their proof lies in advertising exceptional results, and forgetting alike the great body of facts and physiological, pathological and therapeutic principles.

The head of the fœtus, being its heaviest part, ordinarily lies next the vagina. Plums, cherries, etc., are usually found about the head and shoulders. If elsewhere, note if the child had not some other presentation. A slight *punch* is sufficient in early fœtal life to cause an anastomotic aneurism or other *mark*.

In 1885 we waited on Mrs. ——. The baby had no forehead. The top of the head was flat and covered with bony nodules. The expression of the child was idiotic, and its limbs imperfectly developed. We saw in the expression and the imperfect development sequents of an injured and undeveloped brain. We did not inquire about mental impressions but had a history of libidinous connection that produced the conviction that quite another kind of impression had caused what we saw.

We know that some malformations are considered violations of all law—a law unto themselves. If so, we cannot account for their deformities. But, can there be any effect without an efficient cause? Our profession and humanity demands that we seek such cause and strive to quiet the cruel fears of those who bear the curse "In sorrow thou shalt bring forth children."

W. L. SCHENCK, M.D.

Osage City, Kansas, Oct. 16, 1888.

MISCELLANEOUS.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The Sixteenth Annual Meeting of the American Public Health Association will be held in Milwaukee, Wis., on Tuesday, Wednesday, Thursday and Friday, November 20, 21, 22, 23, 1888, at the Atheneum Hall, commencing at 10 A M. Reduced R. R. rates can be secured from all sections of the country on the certificate plan. Papers and reports have been announced as follows:

The President's Address.

"The History and Administration of Quarantine in Texas, 1878 to 1888."—By R. Rutherford M.D., State Health Officer of Texas.

"The Canadian System of Maritime Sanitation."—By F. Montizambert, M.D., Quarantine Officer at Grosse Isle, St. Lawrence River.

"Yellow Fever: Panics and Useless Quarantines—its

Limitation by Temperature."—By John H. Rauch, M.D., Secretary of the State Board of Health of Illinois.

"The Organization of the National Health Service."—By Henry P. Walcott, M.D., President State Board of Health of Massachusetts.

"State Boards of Health."—By Ezra M. Hunt, M.D., Secretary of State Board of Health of New Jersey.

"The Difficulties and Success of the Public Health Service in Large Cities."—By Oscar C. DeWolf, M.D., Health Commissioner of Chicago.

"Ontario Sanitary Legislation, its Strength and its Weakness."—By John Coventry, M.D., Medical Health Officer of Windsor, Ontario, Canada.

"The Destruction of Organic Matter by Fire as a Sanitary Measure—Garbage Furnaces."—By S. S. Kilvington, M.D., President of the Board of Health of Minneapolis.

"Vaccination as a Protection from the Infection of Small-Pox."—By D. W. Hand, M.D., President of the State Board of Health of Minnesota.

"Tuberculosis, its Origin, Detection, and Control."—By D. E. Salmon, D.V.M., Chief of the Bureau of Animal Industry, Washington.

"Veterinary Sanitary Work in Wisconsin, with Special Reference to Diseases Communicable to Man."—By V. T. Atkinson, D.V.M., State Veterinarian of Wisconsin.

"The Relations of Bacteriology to the Discovery and Prevention of Causes of Infectious Diseases among Men and Animals."—By Theobald Smith, M.D., of the Bacteriological Laboratory of the Bureau of Animal Industry, Washington.

"Popular and Scholastic Education in Hygiene."—By J. T. Reeve, M.D., Secretary State Board of Health of Wisconsin.

"Remarks on the Classification of Diseases."—By Henry B. Baker, M.D., Secretary of the Michigan State Board of Health.

"Meteorological Observations as Respects Disease Prevalence."—By Prof. Payne, Director of Observatory, Northfield, Minn.

"Some Personal Observations on Yellow Fever and its Habitudes as Opposed to the Fallacies and Dangers of Personal Quarantine."—By A. N. Bell, M.D., Brooklyn, N. Y.

Valuable reports have been promised from several of the committees. Arrangements have been made for the use of the stereopticon by any who desire to avail themselves of it in illustrating papers presented, as has already been announced by circular from the president's office.

WASHINGTON OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—At the annual business meeting held October 19, 1888, the following officers were elected for the ensuing term:

Joseph Taber Johnson, M.D., President; D. Webster Prentiss, M.D., and W. W. Johnston, M.D., Vice-Presidents; George Byrd Harrison, M.D., Treasurer; Samuel S. Adams, M.D., Recording Secretary; G. Wythe Cook, M.D., Corresponding Secretary.

AMERICAN ACADEMY OF MEDICINE.—The American Academy of Medicine will hold its next annual meeting at the New York Hospital, on Tuesday and Wednesday, November 13 and 14. Papers will be read by Drs. H. I. Bowditch, of Boston; Theophilus Parvin, of Philadelphia; Leartus Connor, of Detroit; L. D. Bulkley, of New York; J. C. Wilson, of Philadelphia; E. Andrews, of Chicago; Geo. J. Fisher, of Singsing, N. Y.; C. C. Bombaugh, of Baltimore; R. L. Sibbet, of Carlisle, Pa.; W. F. Waugh, of Philadelphia; and the President's Address, by Dr. F. H. Gerrish, of Portland, Maine.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department U. S. Army, from October 20, 1888, to October 26, 1888.

Col. Charles Page, Asst. Surgeon-General, Medical Director of the Department, will proceed to and inspect the Medical Department at Fts. Ellis, Tex.; Supply, Reno, Sill and Gibson, I. T.; Ft. Leavenworth, Kan., and the Leavenworth Military Prison, in the order named, and upon completion of this duty return to these Hdqrs. Par. 1, S. O. 127, Hdqrs. Dept. of the Missouri, Ft. Leavenworth, Kan., October 15, 1888.

Major William D. Wolverton, Surgeon, is relieved from duty at Ft. D. A. Russell, Wyom. Ter., and will report in person to the commanding officer, Ft. Douglas, U. T., for duty at that post. Par. 16, S. O. 248, Hdqrs. of the Army, A. G. O., Washington, October 24, 1888.

Major William H. Forwood, Surgeon U. S. Army, Ft. Snelling, Minn., is granted leave of absence for one month, on surgeon's certificate of disability. S. O. 100, Hdqrs. Dept. of Dak., St. Paul, Minn., October 20, 1888.

PROMOTION.

Capt. Leonard Y. Loring, Asst. Surgeon, to be Surgeon, with the rank of Major, October 9, 1888, vice Meacham, deceased.

Capt. Paul R. Brown, Asst. Surgeon, is relieved from duty at Ft. Sidney, Neb., and will report in person to the commanding officer, Ft. D. A. Russell, Wyom. Ter., for duty at that post. Par. 16, S. O. 248, Hdqrs. of the Army, A. G. O., Washington, October 24, 1888.

Major John W. Williams, Surgeon, leave of absence granted in S. O. 209, October 4, 1888, is extended one month, by direction of the Secretary of War. Par. 14, S. O. 246, A. G. O., October 22, 1888.

Capt. Edward C. Carter, Asst. Surgeon, granted leave of absence for one month, by direction of the Secretary of War, to take effect on the completion of his present duties. Par. 13, S. O. 246, A. G. O., October 22, 1888.

By direction of the Secretary of War, First Lieut. William C. Borden, Asst. Surgeon, is relieved from duty at San Antonio, Tex., and will report in person to the commanding officer, Ft. Ringgold, Tex., for duty at that post. Par. 11, S. O. 247, A. G. O., Washington, October 23, 1888.

First Lieut. R. R. Ball, Asst. Surgeon U. S. Army, granted leave of absence for one month, with permission to apply for an extension of one month. Par. 3, S. O. 129, Hdqrs. Dept. of the Missouri, Ft. Leavenworth, Kan., October 18, 1888.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending October 27, 1888.

P. A. Surgeon Howard Smith, detached from the "Wabash" and granted six months' leave, with permission to leave the United States

Asst. Surgeon E. W. Auzal, ordered for examination preliminary to promotion to P. A. Surgeon.

Asst. Surgeon F. W. F. Wieber, ordered for examination preliminary to promotion to P. A. Surgeon.

Asst. Surgeon E. W. Auzal, after examination, detached from Naval Academy and to Navy Yard, New York.

Asst. Surgeon J. F. Uric, detached from the "Franklin" and to Coast Survey Str. "Gedney."

Asst. Surgeon Thos. Owens, detached from Coast Survey Str. "Gedney," and to Coast Survey Str. "Blake."

Asst. Surgeon F. A. Berryhill, detached from Coast Survey Str. "Blake" and to Naval Academy.

Asst. Surgeon A. N. T. Harris, detached from Naval Hospital, Mare Island, Cal., and wait orders.

P. A. Surgeon John H. Hall, detached from the "Monongahela" and wait orders."

P. A. Surgeon M. A. Crawford, detached from the "Vandalia" and to the "Monongahela."

CORRIGENDA.

TREATMENT OF SACRO-ILIAC TUBERCULOSIS.

Dear Sir:—Will you kindly correct, in a note in your next number, the statement in my article of October 20, 1888, page 553, that Prof. Sayre's first operation-case was not previously published? I am advised that it was published in the *Medical Record*, of New York, Feb. 6, 1879. Very sincerely, WELLER VANHOOK,
884 W. Madison St., Chicago.